ESTABLISHED IN 1872

PAPER TRADE JOURNAL

SIXTY-THIRD YEAR

PAPER

Established Feb. 17, 1899
Consolidated Nov. 16, 1899
with PAPER TRADE JOURNAL.

Vol. C, No. 26 Thursday, June 27, 1935

PAPER

Established Sept. 21, 1910
Consolidated Feb. 19, 1925
with PAPER TRADE JOURNAL.

Paper Awards for Government Printing Office

Joint Congressional Committee on Printing on Monday Announced the Successful Bidders for Supplying the Government With Various Lots of Paper for the Six Months' Period Beginning July 1, 1935 on Which Bids Were Received June 17—Awards Are Made on All But Two Bids and Two Lots Are Split Half and Half

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., June 24, 1935—Awards were made today by the Joint Congressional Committee on Printing for a six months' paper supply for the Government Printing Office beginning on July 1st next. The bids were received on June 17.

Awards were made on all but two lots of paper and two awards were made on one item, half and half.

No award was made on Lot 198, facing stereo tissue paper and no award was made on Lot No. 363, strawboard. Only one bid was received on each of these items.

On Lot No. 325, United States postal card bristol which was for 6,000,000 pounds, the awards were made at 4.25 cents per pound, with an award of 3,000,000 pounds going to the Baltimore Paper Company and a like amount going to the R. P. Andrews Paper Company.

The awards in detail were as follows:

News Print

No. 1—500,000 lbs., 24x36—64; rolls, 24, 36, and 48 ins. wide (3-inch fiber cores, with metal ends).

National Pulp & Paper Co..... 2.025c

Machine-Finish Book

No. 3—300,000 lbs., 25x38—70; flat, cut 24x32, 28x38 and 31¼x45½.

John F. Post..... 5.48c

No. 4—400,000 lbs., 25x38—70; flat, cut 24x38 and 38x48 ins.

John F. Post..... 5.48c

No. 5—400,000 lbs., 25x38—70; flat, cut 24x38 and 38x48 ins.

Barton, Duer & Koch Paper Co..... 5.48c

No. 6—300,000 lbs., 25x38—70; rolls 18, 21, 23, and 28½ ins. wide (3-inch iron cores).

Barton, Duer & Koch Paper Co..... 4.93c

No. 7—400,000 lbs., 25x38—70; rolls, 19 and 38 ins. wide (3-inch iron cores).

Perkins Goodwin Co..... 4.93c

No. 8—400,000 lbs., 25x38—70; rolls, 19 and 38 ins. wide (3-inch iron cores).

Fitchburg Paper Co..... 4.93c

No. 9—200,000 lbs., 25x38—70; rolls, 24, 36, and 48 ins. wide (3-inch iron cores).

Dobler & Mudge..... 4.93c

No. 10—300,000 lbs., 25x38—80; rolls, 32 ins. wide (3-inch iron cores).

J. W. Butler Paper Co..... 4.98c

No. 11—400,000 lbs., 25x38—80; flat, cut 24x38, 33¾x64, and 38x48 ins.

Watervliet Paper Co..... 5.24c

No. 12—250,000 lbs., 25x38—100; flat, cut 22¼x32¼, 24x38, 24¼x36¼, 32x42, 38x48 and 41x52 ins.

Whitaker Paper Co..... 5.00c

No. 13—5,000 lbs., 25x38—120 and 140; flat, cut 29x41 and 38x48 ins. Min. order 5,000 lbs.

Whitaker Paper Co..... 5.00c

No. 14—10,000 lbs., blue and salmon, 24x38—70 and 100; flat, cut 25x38 and 38x48 ins. Min. order, one color, 5,000 lbs.

R. P. Andrews Paper Co..... 6.28c[1] 5.80c[2]

[1] 70 pounds. [2] 100 pounds.

Machine-Finish Book End Paper

No. 15—40,000 lbs., flat, 25x38—160; the grain to run the 38-inch way.

Merrimac Paper Co..... 5.50c

Offset Book

No. 16—150,000 lbs., 25x38—120; flat, cut 24x38 and 26x32 ins.; grain as ordered. Min. order 5,000 lbs.

Aetna Paper Co..... 5.75c

Antique Book

No. 17—100,000 lbs., 25x38—100; flat, cut 25x38 and 38x50 ins.

Perkins Goodwin Co..... 5.25c

Lightweight Machine-Finish Book

No. 18—50,000 lbs., 25x38—60; flat, cut 32x48 and 38x48 ins.

Perkins Goodwin Co..... 5.96c

50 Per Cent Rag Lightweight High Machine-Finish Book

No. 19—20,000 lbs., 25x38—60; flat, cut 32x48 and 38x48 ins.

Barton, Duer & Koch Paper Co..... 11.52c

50 Per Cent Rag Machine-Finish Book

No. 20—150,000 lbs., 25x38—80; flat, cut 32x48 and 38x48 ins.

Champion Coated Paper Co..... 10.09c

No. 21—60,000 lbs., 25x38—80; flat, cut 22¾x31½, 29x41 and 31½x45½ ins.

Champion Coated Paper Co..... 10.09c

No. 22—20,00 lbs., 25x38—90; flat cut any size, min. width 24 ins., max. width 42 ins.

Whitaker Paper Co..... 9.60c

75 Per Cent Rag Laid Antique Book

No. 23—15,000 lbs., 25x38—140; flat, cut 24x38 and 29x41 ins.; the laid marks

(Continued on page 22)

Price Bros. & Co's Reorganization Proposals

Receiver to Discuss New Plans With Various Groups of Security Holders—Fresh Offers Anticipated From Bowater's Paper Mills, Ltd., London, England—Revival of Plan to Consolidate All Canadian Newsprint Paper Companies

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., June 24, 1935—Two developments in the newsprint industry have occupied attention during the past week. One is that Bowater's Paper Mills, Ltd., of London, may make a new offer for the reorganization of Price Bros. & Co., one of Canada's largest newsprint and lumber firms, now being operated under a receivership. The other is the revival of a plan to reorganize the entire newsprint industry by merging all newsprint companies.

With respect to Price Bros. & Co., the receiver for that company, the Hon. Gordon Scott, has just returned from England, having gone there, it is understood, to confer with the principals of Bowater's Mills in regard to their stand respecting offers made on their behalf. Reports from London following the departure of Mr. Scott for Canada indicated that a hitch had developed in the negotiations, color being lent to this report by the abandonment during the same week of a meeting of Price Bros. bondholders that had been called by the protective committee.

The Bowater interests, doubtless recalling the waste of time and money resulting from the extended, but fruitless, negotiations during 1933 and 1934, have not made a firm offer, and, it is understood, have indicated their unwillingness to do so until they have more or less definite assurance that any offer they do submit will be acceptable to all classes of Price Bros. security holders.

General Lines of Proposed Deal

The general lines along which they are prepared to deal are, it is understood, as follows: No interference with first mortgage bonds, either as regards principal sum or interest rate, with arrears of interest to be met through the issuance of additional bonds—to the extent of approximately $2,250,000—and interest on the first mortgage issue to be resumed August 1, 1935; creditors to be paid fully in cash; and preferred and common shareholders to get an exchange of new common stock, on a basis not yet decided upon, for their holdings. It is suggested that preferred shareholders will be offered approximately 30 per cent of the new common stock to be outstanding and common shareholders one share of new common for each 10 shares now held.

This tentative offer provides more favorable terms than under the terms of the company's plan of 1934 for creditors, who would get cash in discharge of their claims instead of income certificates. The offers made to all classes of security-holders are, however, less favorable than under the company's plan, which provided for payment of back interest on the first mortgage bonds in cash; par for par in new 5 per cent preferred stock—cumulative only to the extent of earnings thereon—for preferred shareholders; and 1 new no par value common share for each 3 shares of existing $100 par value common stock.

Bowater's Paper Mills, under the terms of the plan as tentatively outlined, will underwrite an issue of $6,000,000 of second mortgage bonds, the proposed coupon rate on which is not divulged, proceeds from which would be used to provide the necessary cash to meet creditors' claims, to wipe out bank loans, and to provide working capital. Common stock, to an extent undivulged, would be issued to the Bowater interests as a consideration for the underwriting of the second mortgage bonds.

Mr. Scott will discuss with the various groups of security holders the new proposal. Meanwhile the opinion seems to prevail that prospects for the newsprint industry are somewhat less favorable than they were early last year when the Bowater interests and the Duke-Price-Beaverbrook-Rothermere group were competing for control of Price Bros. In 1934, demand for newsprint was expanding steadily and the outlook for better prices was apparently bright. Today, while demand and production remain at a high level, the prospects for higher prices have been practically dissipated by developments within the industry since last winter.

Big Merger Now Mooted

With respect to the plan to merge all newsprint companies, this has not got beyond talk, which, however, has been reflected in the newspapers. The plan, as now mooted, is said to embrace a consolidation of twenty existing newsprint companies into three or four regional corporations—one for Quebec, one for Ontario, one for the Maritimes and possibly another for Manitoba and British Columbia.

Grellet N. Collins Leaves International Paper Co.

Grellet N. Collins has resigned his position as manager of the Book and Bond Division of the International Paper Company.

Mr. Collins was formerly manager of the Continental Paper & Bag Corporation and the Groundwood Specialties Division of the International Paper Company and was at one time Vice President of Dill & Collins Inc., Philadelphia, Pennsylvania, and Production Manager of the Bryant Paper Company, Kalamazoo, Michigan.

No plans for the immediate future have been made by Mr. Collins, who may be reached at 41 Woods Lane, Scarsdale, N. Y.

Union Bag Orders Pusey & Jones Machine

WILMINGTON, Del., June 24, 1935—The Pusey & Jones Corporation, of Wilmington, has announced it has received a contract to build a paper-making machine for the Union Bag and Paper Corporation for use in a mill in Savannah. It is reputed to be the largest papermaking machine the company has built in many years. It will cost about $500,000, and will add about 500 employees to the pay roll of the builders for six or seven months.

Government Paper Awards

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., June 26, 1935—The R. P. Andrews Paper Company has been awarded the contract for furnishing the Government Printing Office with 800 pounds of 28½ x 33½—120 pounds enameled blotting paper at 10.18 cents per pound, bids for which were received on June 12.

Chicago Paper Market Reflects General Dullness

Despite Restricted Demand for Various Standard Grades of Paper, Quotations Continue Steady to Firm—Fine Paper Division Only Moderately Active—Position of Coarse Paper Section Practically Unchanged—Paper Stock Request Improves Slightly

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., June 22, 1935—With two important association meetings slated to be held in Chicago next week, market attention will probably be centered in this locality—at least for the time being. The Chicago paper market continues to reflect the general dullness and hesitancy of business and demand has, according to issued and individual reports, receded somewhat from that of the past week. However, and considered significant, the market has continued to remain satisfactorily firm despite many rumors to the contrary. No breaks have been noted and the industry is retaining its position in admirable shape.

The fine papers found no lessening in the price structure though demand did not hold up quite so well in all groups. Books and covers are about the same. Sulphite bonds were slow while bonds and ledgers were seemingly entrenched in that always expected summer dullness. Groundwoods have been reported better during the past month than for some time past. Newsprint, though production and consumption figures have improved, shows no particular tendency to improve itself, according to local representatives. Krafts are unchanged although the retail outlets are moving more slowly at this time. There was a bit more activity reported in the waste paper industry, with mixed papers making the best showing. Krafts and books were virtually unchanged.

Association Activities

Two important meetings are scheduled for Chicago next week—meetings which are credited with being unusually important since the termination of the NRA provisions. The Book Paper Manufacturers Association will hold an afternoon session on Tuesday, June 25, at the Blackstone Hotel with the Converting Committee scheduled to provide the discussion for the meeting. Manufacturers of tablet and envelope papers have been invited to participate in the meeting called by R. S. Berry, Secretary, and to be carried out under the direction of C. A. Clough, chairman of the Converting Committee.

The Sulphite Bond Group of the Writing Paper Manufacturers Association, will meet at the Blackstone Hotel at the same time and on the same day with E. H. Naylor, secretary-treasurer, presiding. Both meetings will feature matters of extreme importance to the marketing aspect of the respective groups of paper.

On June 24 the Middle West Division of the Salesmen's Association of the Paper Industry will hold a meeting of more than ordinary interest inasmuch as two men well known in the paper industry are scheduled to participate in the program. The meeting will be held at the Blackstone Hotel at 12:30 p. m. instead of at the Hamilton Club. A special effort is being made by R. C. Johnson, division vice-president, to secure a representative attendance from the mill representatives of the city, whether association members or not.

Charles Boyce, executive secretary of the American Paper and Pulp Association, will be present and will outline some of the problems now confronting the industry. Another of the speakers scheduled is F. J. Sensenbrenner, president of the American Pulp and Paper Company. After the speaking, the meeting is to be thrown into an open forum for round table discussion.

The Public Health Committee of the Cup and Container Institute has received some favorable publicity in Chicago through its recently issued statement headed "Protect Vacation Happiness with Cleanliness." The statement outlines the need for sanitation when thousands of vacationists are "on the road" this summer. After pointing out a number of dangers of the common drinking cup, the statement, by inference and in a very effective way, urges that educational material be sent out from all sources stressing the danger of unclean drinking utensils. It is a splendidly arranged news story and should effectively boost the sale of paper cups and containers during the summer months.

Salesmen's Golf Outing

Fifty-two salesmen and guests took advantage of some unusually fine weather to celebrate the second monthly golf outing of the mid-west division of the Salesmen's Association of the Paper Industry. The event, under the direction of Ben Babbitt, golf chairman, was held at the Skokie Country Club on Thursday, June 20. Following are the prize winners:

Low gross, Ray Odman; low net, 17 and under, Elmer Long; low net, 18 and over, Jim Tyrrell; low net, first nine, Gregg Frelinger; low net, second nine, Ham Vose; low putts, individual, Bert Tucker; low putts, first nine, Bob Whitelaw; low putts, second nine, Harold Leahy; low putts foursome, Bob Whitelaw, Ben Babbitt, Bert Tucker and Ralph Burnett; low net foursome, Ham Vose, Bill Jonas, Gregg Frelinger and Paul Wesco; second low net foursome, Henry Prosser, J. Warden Powell, Hank Fralick and Dana Pratt; high putt foursome, Ray Russell, Harold Knott, Harold Leahy and Bill Tilden; high gross foursome, Pete Servass, Joe Cunningham, Harold Pfister and Harry Van Patten. High gross honors on any hole were won by George K. Gibson. Low gross on par three holes went to Warren Moore and low gross on par five holes to Bill Tilden. Joe Daley won high gross and Harold Pfister high net with Hank Engel coming through for the blind bogey prize.

The next outing, luncheon, golf and dinner, will be held at the Bob-O-Link Country Club, Highland Park, on Friday afternoon, July 19.

News of the Trade

The concluding chapter of "How Paper Is Made," the serial story running in the house organ of Kable Brothers Printing Company, is carried in the June issue. The article describes the various uses of paper and paper pulp and lists some of the products turned out by paper mills and by converting mills using paper or paper pulp. "Truly the versatility of paper is unlimited" says the concluding sentence of the series.

The Marvin Envelope and Paper Company, formerly at 439 South Clark street, Chicago, has recently moved to larger and more serviceable quarters located at 626 Federal Street, very nearly the center of an important section of Chicago's printing industry. The firm carries a comprehensive line of bond and writing papers.

Demand for Paper Irregular In Toronto, Ont.

Volume of Paper Sales Fluctuates From Day to Day—First Six Months of Year Slightly Ahead of Corresponding Period In 1934—Manufacturers of Book and Writing Papers Fairly Active—Consumption of Newsprint Paper Somewhat Higher

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., June 24, 1935—The general characteristic of the paper market, outside of newsprint, is that it is spotty. Some weeks during the past month orders were very good for a few days and then would fall off suddenly. There are not that pep and swing to steady business which wholesalers and retail distributors would like to see but, on the whole, the first six months of the year 1935 are slightly ahead of the corresponding period in 1934.

Tissue paper mills report increased activity and book and writing plants are keeping fairly busy but could take care of a larger number of orders. Newsprint production is about the same as in 1934 but consumption is somewhat higher. There is stated to be little possibility of an increase in price.

The rag and paper stock market is getting slightly stronger almost every week. The dollar volume of sales is about ten per cent above last year for the same period and the volume demand is about fifteen per cent ahead. Roofing stock has been very strong but its market position is less favorable as the mills are accumulating stock rapidly.

News of the Industry

Thompson-Heyland Lumber, Ltd., has been granted a charter with headquarters in Toronto and an authorized capital of $40,000. The concern is the successor of the Thompson and Heyland Lumber Company, Ltd., and A. J. Bailey has been elected president, succeeding the late James Thompson; while E. A. Breckenridge has been reappointed secy.-treas. and S. W. Wallace a director in charge of purchases. The company are the largest pulpwood dealers in Ontario and have entered into contracts for the coming year for about one hundred thousand cords. Shipments are made to mills in southern Ontario, New York, Pennsylvania and other states. The contract prices for wood are this season made on a basis of ten per cent less than a year ago owing to many mills having large stocks on hand and the future of the industry not being sufficiently stabilized.

The annual drive of the Abitibi Power and Paper Company, Toronto, in the Sault Ste Marie area, is about over on the Magpie, Agawa and Michipcoten rivers. Some of the wood comes from as far North as Dalton. The work of rafting the logs to the Sault is progressing rapidly.

Earnings of the Corrugated Paper Box Company, Ltd., Toronto, are stated to be running in excess of those of 1934 and preferred shareholders are reported to be forming a committee which will formulate and present plans whereby the company may be able to take care of arrears. Preferred dividends were resumed on June 1 last with the payment of $1.75 on each of the 7,835 preferred shares outstanding. Prior to that no dividend had been paid since June 1, 1930. Arrears therefore amount to $33.25 a share or a total of $260,514.

Harold Crabtree, president of the Howard Smith Paper Mills, says that no consideration has been given by the directors to any plan for the wiping out of arrears on preferred stock. It is expected that some announcement will be made before the end of 1935 with regard to a dividend distribution. Operations of the company this year to date have been on a somewhat more active scale, with business both in the domestic and export markets showing a slight improvement. Due to higher costs in some directions, however, earnings have been running at materially the same level as for the corresponding period of 1934.

J. H. Gray, manager of the Makmor Company, Victoria, B. C., has developed a process of waterproofing which may have a considerable effect on the paper business. The product is made from two common waste materials and is covered by patents all over the world but the inventor does not as yet care to reveal the process. Mr. Gray says that one of the leading paper mills of the United States has offered him a contract to treat one thousand tons of crimp paper annually.

Good progress is being made on the erection of three mill buildings and a boiler house, 20,000 feet square, by the Garden City Paper Company, Merritton, Ont., of which Richard Carroll is manager. The foundations are now in and all the contracts have been let.

Paper Firms Taxed for Reservoir

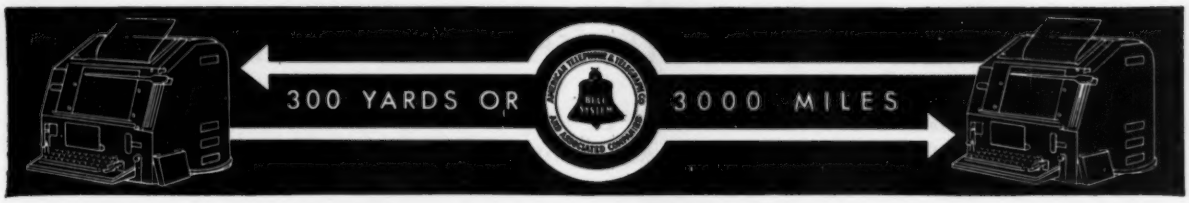
[FROM OUR REGULAR CORRESPONDENT]

GLENS FALLS, N. Y., June 24, 1935—Paper mills in this section bear a large portion of the tax levies this year in connection with the maintenance of the Sacandaga Reservoir which was constructed by the Hudson River Regulating Board for their benefit. Assessments in Saratoga county are the largest, amount to $86,912.50. The county assessments are as follows:

Rensselaer County—West Virginia Pulp and Paper Company, $51.25 and Adirondack Realty Holding Company, formerly Wood-Flong Corporation, $36.25. Saratoga County—West Virginia Pulp and Paper Company, $163.75 and New York Power and Light Company and West Virginia Pulp and Paper Company, $1,768.75; Adirondack Realty Holding Company, $1,316.25. Washington County—United Paper Board Company, $1,630; Fort Miller Pulp and Paper Company, $1,005; International Paper Company, $370 and Union Bag and Paper Company, $8,411.25. The assessment of $17,845 for Warren County is divided among paper mills at Glens Falls and in the towns of Luzerne and Queensbury.

Parsons Paper Co. Report

HOLYOKE, June 25, 1935—The annual statement of the Parsons Paper Company by its treasurer, Elmer B. Cooley, is as follows: Assets, cash $13,775, accounts receivable $67,138, notes rec. customers $20,200, notes receivable others $37,195, merchandise $241,326, supplies $103,825, securities $616,199, real estate $1,155,366, machinery $901,364, vehicles $1,306, furniture $42,839, prep'd items $14,986; treas. stock $7,500, total $3,223,019. Liabilities, accounts payable $11,009, reserve for depreciation real estate $275,061, reserve for depreciation machinery $607,333, reserve for depreciation fixtures $38,826, reserve for depreciation vehicles $973, reserve for taxes $1,656, accrued labor $2,288, capital stock $1,943,200, surplus $342,673, total $3,223,019.



From Allied to Zellerbach, a long list of paper companies are profitably using Bell System Teletypewriter Exchange Service for fast typewritten communications with mills, branches and customers. Communications typed on the sending machine are simultaneously reproduced on plain paper or printed forms at all connected machines. Typing-by-wire saves time, reduces errors and speeds up deliveries to customers.

So fast, so flexible is this modern communication service that it frequently pays for itself in economies. Your local Bell Company will be glad to tell you more about this service . . . why so many paper companies are using it . . . and how it can be applied to your business.

Allied Paper Mills
Alton Box Board & Paper Co.
American Reenforced Paper Co.
American Tissue Mills, Inc.
Atlantic Paper Co.
Bogalusa Paper Co.
Brodrick, Harold L.
Brown Co.
Bryant Paper Co.
Butler Paper Corporation
Cantine, Martin, Co.
Carter Rice & Co.
Central Michigan Paper Co.
Central Ohio Paper Co.
Champion Coated Paper Co.
Chemical Paper Co.
Chestney, B. A.
Chicago Mill Paper Stock Co.
Chillicothe Paper Co.
Clarke & Co.
Consolidated Water Power & Paper Co.
Crocker Burbank & Co. Assn.
Crocker-McElwain Co.
DeJonge, Louis, Co.
Dennison Manufacturing Co.
Dwight Bros. Paper Co.
Eastern Manufacturing Co.
Eddy Paper Corporation
Emery, Quincy P., Inc.
Escanaba Paper Co.
Esty, Chas. A., Paper Co.
Falulah Paper Co.
Fitchburg Paper Co.
Gibraltar Corrugated Paper Co.
Gilman Paper Co.
Graham Paper Co.
Groveton Paper Co., Inc.
Imperial Paper & Color Corp.
International Paper Co.
Kalamazoo Vegetable Parchment Co.
Kimberly-Clark Corporation
Knode, Chas. W., Co.
Kupfer Bros. Co.

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PAPER COMPANIES use Bell System Teletypewriter Exchange Service for greater economy and efficiency

Lindenmeyer, Henry, & Sons
Mead Corporation
Merrimac Paper Co.
Minnesota & Ontario Paper Co.
Munising Paper Co.
Myers, R. M., & Co.
National Blank Book Co.
National Cellulose Corporation
Nekoosa-Edwards Paper Co.
Northwest Paper Co.
Old Colony Envelope Co.
Oxford Miami Paper Co.
Oxford Paper Co.
Pacific Coast Paper Co.
Package Paper Co.
Paper Service Company
Penobscot Chemical Fibre Co.
Pioneer Paper Stock Co.
Puritan Stationery Co.
Reigel Paper Corporation
St. Regis Paper Co.
Seaman Paper Co.
Sherman Envelope Co.
Sierra Paper Co.
Sisalkraft Co.
Southwestern Paper Co.
Spaulding Fibre Co.
Standard Paper Co.
Storrs & Bement Co.
Taggart Bros.
Thorpe & Martin Co.
Tileston & Hollingsworth
United Wall Paper Factories, Inc.
Warren, S. D., Co.
Waterfalls Paper Mills
Wheelwright Paper Co.
White & Wyckoff Mfg. Co.
Whiting Paper Co.
Wilcox-Walter-Furlong Paper Co.
Zellerbach Paper Co.

Philadelphia Paper Market Conditions Normal

Usual Indices of Summer-Seasonal Business In Various Divisions of Local Paper Trade Considered Promising—Paper and Twine Merchants Annual Outing Proves Highly Successful—L. O. Howell Joins Paper House of Pennsylvania Staff

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., June 24, 1935—All the usual indices of summer-seasonal business in the paper trade are encouraging, which is indicative that there is a more cheerful frame of mind than prevailed a year ago, and more recreation is being planned, even if it cannot be done on a pre-depression scale.

Paper and Cordage Outing

That always fondly anticipated and well-attended function of the Philadelphia Paper and Cordage Association—its annual outing—was held this year on the afternoon of June 21 at the Manufacturers Country Club at Oreland, Pa., and attracted to the grounds a large, enthusiastic and most representative delegation of the association's membership and their friends. Quite incidentally it also attracted much public attention. The journey to the country club was made in a procession of autos, arriving about noon. President Harry S. Platt turned the meeting over to Secretary Vincent A. Dirvin.

All the features of the association's outings at their best were presented by the committee headed by E. K. Lay and his committee, and the crowd was there, numerous and enthusiastic, to enjoy them. After a vociferous athletic afternoon, all enjoyed the banquet, which was served at 6 o'clock, and a particularly pleasing entertainment, talent for which was furnished from the ranks of the membership, was the conclusion of a perfect day, to which there is applicable the truthful, even though hackneyed expression, "and a good time was enjoyed by all." Supplementing with the rendition of Carrie Jacob Bond's —"The End of a Perfect Day"—Charles F. Koenig of the Buffalo Envelope Company, held the undivided attention of all those present. A 4-piece orchestra played appropriate selections.

The results of the contests on the greensward were as follows: Lewis O'Neill, of Paper Manufacturers, led the field of shotmakers in the golf tournament, when he shot a fancy 35-39—74 card. By reason of his excellent gross score, Mr. O'Neill was the recipient of the silver cup presented by the Schuylkill Paper Company. The gross figure of Mr. O'Neill was three over the theoretical perfection for the course. The net score registered at the tourney was fashioned by D. G. Ashworth, of D. L. Ward & Co., when he tallied a 72. In the Kickers' Handicap, prizes were awarded to G. M. Batchellor, E. K. Lay and Mr. Reed of Quaker City Paper Company.

The tennis tournament honor fell to Dick Richmond, of F. W. Winnie & Co., with John Shimer as runner up. G. L. Baker emerged victorious in the quoit jousting, while George K. Hooper, former president of the association, won second place. Tennis and quoit games were played in the woods adjoining the Club's grounds.

Elaborate silver prizes donated by the association were awarded the winners during the concluding course of the banquet.

Others who contributed to the entertainment were W. B. Kilhour, Jr., president of Quaker City Paper Company, who, with his baritone voice of rare quality sang several selections, among which was The Rogue Song; Joseph Dirvin gave a piano recital and favored with accompaniments; Jim McKee, of Paper Manufacturers, sang in his dynamic way Barnacle Bill the Sailor, while George K. Hooper entertained with a musical saw, playing Carry Me Back To Ole Virginny, and together with Willard Parkes, of Garrett-Buchanan Company performed on the tap drum.

Door prizes were awarded to Sam Shyrock, of Shyrock Bros., and Joe Miller, of Garrett-Buchanan Company.

Simon Walter made a hurried trip from his Allentown plant to grace the occasion with his presence, and H. G. Kline came up from Norfolk to be in attendance. T. M. Mullen, of the Trinity Bag and Paper Company, Chicago, Ill., and H. G. Kleinfelder, Jr., of the Grady-Travers Company, New York, were among the out-of-town guests. The presence of J. R. Howarth was made possible by his return from a southern trip from Richmond, Norfolk, Virginia Beach, White Sulphur Springs and Hot Springs.

Noticeably missing in the gathering was Leslie C. Bartlett, chairman of the Finance Committee, and it was with deep regret that news of his illness was announced. Mr. Bartlett has always been up and doing in the activities of the association since its inception. His many friends in the trade express their best wishes for his speedy recovery.

News of the Trade

L. O. Howell, 3rd, formerly with Thos. W. Price Company, has joined the staff of the Paper House of Pennsylvania. He will specialize in high grade papers, and in preparation for his duties Mr. Howell has spent considerable time at Strathmore, Crane and other mills in the Pennsylvania area, which are represented by the Paper House of Pennsylvania.

Bids for the Department of Supplies at Harrisburg were opened on June 3. No definite awards have been made as far as is known. There was some question of throwing out the bids and re-advertising, but the latest information in trade circles is that this will not be done.

D. C. Jordan Made Huyck Director

F. C. Huyck & Sons, Albany, N. Y., manufacturers of Kenwood Felts and Jackets, announce the election of David C. Jordan as a director of that company. Mr. Jordan, who is widely known in the paper industry, has been a sales representative of F. C. Huyck & Sons since 1909 and has represented his company in all parts of the country. He was made a director to fill the vacancy caused by the recent death of Mr. Watson A. Yule. Mr. Jordan will continue to act as sales representative for the company.

Fort Orange Elects Directors

CASTLETON-ON-HUDSON, June 24, 1935—Seven directors were re-elected at the annual meeting of the stockholders of the Fort Orange Paper Company here. They were Col. Peter C. Brashear, chairman; W. Gordon Latham, Robert G. Harris, Harry W. Feiberts, Castleton; Charles T. Church, New York; E. A. Schroder, Syracuse; and John A. Becker, Albany. Officers will be elected on August 13.

Obituary

Frank A. Sanborn

One of the best known members in the Gumming Industry, in the person of Frank A. Sanborn, passed away on Tuesday, May 28.

Mr. Sanborn was associated with the McLaurin-Jones Company, for a great many years, being vice president of the company. He was the first salesman to be employed by the parent company, the Ideal Coated Paper Company, his connection starting in 1907, at which time he was taken on as representing the Ideal Coated Paper Company in New England.

After covering that territory for a year, he was transferred to and opened an office in Chicago, covering the entire midwestern section of the country for a great many years. He was probably the best known gummed paper salesman in the middle west, if not in the United States.

His death was very sudden. He was stricken in his office at noon on Monday, May 27, and died without regaining consciousness, early Tuesday morning.

The committal service was conducted in Chicago with the Masonic Ritual being used. Mr. Sanborn was a member of the Blue Lodge and also the Mystic Shrine, being a thirty-second degree Mason.

Burial was in the Forest Hills Cemetery at Jamaica Plain, Mass. on June 1.

Mr. Sanborn is survived by his widow, Mrs. Edith Sanborn.

Fred H. Sturtevant

[FROM OUR REGULAR CORRESPONDENT]

SPRINGFIELD, Mass., June 25, 1935—Fred H. Sturtevant, aged 70, retired papermaker, prominent in Masonic circles, died last Wednesday night at his home, 219 Florida street, after a long illness.

He had been forty years in the service of the American Writing Paper Company, Inc., at Holyoke before retiring in 1921.

Mr. Sturtevant was born in this city in August, 1864, and spent his early life in Washington. In 1884 he entered the employ of the American Writing Paper Company and was promoted from position to position until he became general superintendent.

He was a member of the South Congregational Church and was a member of Springfield Lodge Masons and a 32d degree Mason. Besides his wife, Mrs. Anna Taylor Sturtevant, he leaves a son, Windsor Sturtevant, of Longmeadow; and two daughters, Mrs. R. L. Bowles, of Lancaster, Pa., and Miss Annie Sturtevant of this city; and three grandchildren. The funeral was held Thursday afternoon, with burial in the Fairview Cemetery, Chicopee.

George J. Lockway

KALAMAZOO, Mich., June 22, 1935—George J. Lockway, aged 66, president of the Lockway-Stouck Paper Company, associated in the paper industry in this city for forty years, died at his home, 2407 Portage street, from a heart ailment on Sunday, June 9. He had been ill for two weeks.

Mr. Lockway was born in Massachusetts and came to this city in 1895 and for a number of years was superintendent of the Bryant Paper Company. Later he was connected with the Watervliet Paper Company and also the Munising Paper Company. Seventeen years ago he organized the Lockway-Stouck company, which at the time was located at Benton Harbor. Later the concern moved to this city.

Surviving are the widow, Edwina; a son, Herbert Lockway, Kalamazoo; and five sisters, Margaret, residing in Chicago; Mrs. Earl Roomsburg and Mrs. Peter Denner, both of Kalamazoo, Mrs. Josephine Ball, Detroit, and Mrs. James Schaffer, Oakland, Cal.

Boston Paper Trade Happenings

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., June 24, 1935—The Code Authority of the Paper Distributing Trade, the Regional Committee of the 1st Region and the various Trading Area Sub-Committees are liquidating. A notice states that all claims against any of the aforementioned must be presented at the office of the executive secretary of the aforesaid Regional Committee on or before the 15th day of July, 1935, at 5 p. m. The foregoing will not be responsible for any claims asserted against them or any of them thereafter.

Frank C. Herrick, of the Columbian Rope Company, Auburn, N. Y., is to give a sales talk to the entire sales force of Carter Rice & Co., Corp., distributors for that company, Saturday morning, June 29.

F. Bendel Tracy, as vice-president of the National Paper Trade Association, went to Virginia Beach, Va., and later to Lick Springs, Ind.

J. E. Catlin, of the Badger Paper Mills, Inc., Peshtigo, Wis., spent last week with Arthur M. Burr, representative in New England for that company, contacting the trade with salesmen of Knight, Allen & Clark, Inc., which concern has the agency for Ta-Non-Ka Bond.

Winthrop L. Carter, president and general manager of the Nashua Gummed and Coated Paper Company, Nashua, N. H., which has a Boston office, returned from Europe on the Cunard liner *Laconia* last Monday after a six weeks' business survey of England, France and Holland, with special interest in the money situation. Mr. Carter, who is president of the New England Council, presided at the conferences of that body held last week in Manchester, Vt., giving a report of his survey.

William E. Treat, of White & Wells Company, paper box manufacturers, at Waterbury, Conn., who is well known in the trade here, has returned from a pleasure trip to Virginia.

Boston Paper Market Fairly Active

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., June 24, 1935—Sales of paper averaged a fair volume in the Boston market last week, and in a few cases the demand was reported as rather active. With the approach of July, however, a seasonal quiet is developing, and it is stated that not a great deal of business is expected before August 15. The box board market was quiet to fair. Most of the paper box mills in the New England area will be closed from June 28 to July 8.

Prices of paper stock remained firm, in some cases advancing, although with the approach of the dull season, there was less activity in the market and the number of grades moving rather limited. Conditions are improving, with values becoming firmer. The trade expects a good fall business. Prices of mixed papers and old newspapers, under old papers, remained unchanged. Bagging was fairly active, with the supply limited. One house sold a 100-ton lot of foreign gunny No. 1 at 1.80, said to be the highest price since 1930, and an advance from the previous quotation of 1.70. Paper mill bagging rose to 1.25 from 1.10. New and old domestic rags remained at the same levels. Inquiry for roofing stock continued. In foreign rags, old fustians advanced to 1.75 from a range of 1.50 @ 1.55.

PAPER AWARDS FOR GOVERNMENT PRINTING OFFICE

(Continued from page 13)

to run the 24-inch direction of the sheet; the grain and chain marks to run lengthwise of the sheet.

Barton, Duer & Koch Paper Co..... 14.31c

100 Per Cent Rag Machine-Finish Book

No. 24—5,000 lbs., 25x38—90; flat, cut 24x38 and 38x48 ins.; the grain to run lengthwise of the sheet. Min order 5,000 lbs.

R. P. Andrews Paper Co. 16.25c

No. 25—15,000 lbs., 25x38—140; flat, cut 24x38 and 38x48 ins.; the grain to run lengthwise of the sheet.

R. P. Andrews Paper Co. 16.25c

Supercalendered Book

No. 26—15,000 lbs., 25x38—90; flat, cut 32x48 ins. Min. order 10,000 lbs.

Perkins-Goodwin Co..... 5.50c

No. 27—200,000 lbs., 25x38—90; flat, cut 31¼x45½ ins.

Perkins-Goodwin Co.

No. 28—200,000 lbs., 25x38—90; flat, cut 24x38 and 38x48 ins.

R. P. Andrews Paper Co. 5.50c

No. 29—300,000 lbs., 25x38—90; rolls, 38 ins. wide (3-inch iron cores).

Stanford Paper Co. 4.98c

No. 30—300,000 lbs., 25x38—90; rolls, 28½ and 38 ins. wide (3 inch iron cores).

Perkins-Goodwin Co. 4.98c

No. 31—10,000 lbs., 25x38—90 and 100; flat, cut any size, min. width 24 ins., max. width 42 ins. Min. order, one weight, 10,000 lbs.

R. P. Andrews Paper Co. 5.50c

50 Per Cent Rag Supercalendered Book

No. 33—10,000 lbs., 25x38—90; flat, cut 32x48 ins. Min. order, one weight, 10,000 lbs.

Whitaker Paper Co. 10.34c

Halftone Book

No. 34—50,000 lbs., 25x38—140; flat, cut 24x38, and 38x48 ins.

Whitaker Paper Co. 5.25c

Single-Coated Book

No. 35—160,000 lbs., 25x38—140; flat, cut 29x41, 38x48, and 41x52 ins.; the grain to run lengthwise of the sheet.

Whitaker Paper Co..... 6.35c

Double-Coated Book

No. 36—40,000 lbs., 25x38—140 and 160; flat, cut 24x32, 24x38, and 38x48 ins.; the grain to run lengthwise of the sheet.

John F. Post 7.10c

50 Per Cent Rag Double-Coated Book

No. 37—25,000 lbs., 25x38—140 and 160; flat, cut 24x32, 24x38, 32x42, 38x48, and 41x52 ins.; the grain to run lengthwise of the sheet.

Barton, Duer & Koch Paper Co. 13.13c

50 Per Cent Rag Machine-Finish Lithograph

No. 40—20,000 lbs., 25x38—160; flat, cut 26x38 ins.; the grain to run lengthwise of the sheet.

Whitaker Paper Co. 9.99c

Mimeograph, White and Colored

No. 43—1,500,000 lbs., white, Nos. 40 and 48; flat, cut 24½x30½, 24½x32, 24½x38, 26x42½, and 28½x34½ ins.; the grain to run lengthwise of the sheet.

Cauthorne Paper Co. 5.57c

No. 44—100,000 lbs., blue, buff, green, pink, and yellow, No. 40; flat, cut 24½ x30½, 24½x32, 24½x38, and 26x42½ ins.; the grain to run lengthwise of the sheet. Min. order, one color, 10,000 lbs.

Watervliet Paper Co. 6.54c

25 Per Cent Rag Mimeograph

No. 47—1,400,000 lbs., Nos. 40 and 48; flat, cut 24½x30½, 24½x32, 24½x38, 26x42½, and 28½x34½ ins.; the grain to run lengthwise of the sheet.

Aetna Paper Co. 6.68c

Blue U S M O Safety Writing

No. 51—400,000 lbs., No. 32; rolls, 11 and 22 ins. wide, 24 ins. in diameter (3-inch iron cores).

R. P. Andrews Paper Co. 8.74c

U S M O Writing, White and Blue

No. 52—8,000 lbs., No. 32; rolls, 8½ ins. wide, 24 ins. in diameter (3-inch iron cores). Min. order, either color, 4,000 lbs.

American Writing Paper Co.... 6.06c[1] 7.03c[2]

[1] White. [2] Blue.

Safety Writing, Colored

No. 53—15,000 lbs., blue, gray, pink, salmon, and yellow, No. 40; flat, cut 17x 28, 21x32, and 22x34 ins. Min. order, one color, 2,000 lbs.

Mathers-Lamm Paper Co. 9.15c

Sulphite Writing, White and Colored

No. 55—1,000,000 lbs., white, No. 32; flat, cut 21x32; 22x34, 24x38, 26x34½, 27x35, 28x34, and 32x42 ins.

Perkins-Goodwin Co. 5.57c

No. 56—1,600,000 lbs., white, Nos. 40 and 48; flat, cut 21x32, 22x34, 23x26, 24x38, 27x35, 28x34, and 32x42 ins.

R. P. Andrews Paper Co..... 5.57c

No. 57—80,000 lbs., white, No. 26; rolls, min. width 16 ins., max. width 38 ins. (3-inch iron cores).

Whitaker Paper Co. 6.33c

No. 58—250,000 lbs., white, No. 32; rolls, min. width 16 ins., max. width 38 ins. (3-inch iron cores).

Bermingham & Prosser Co. 4.99c

No. 59—150,000 lbs., white, Nos. 40 and 48; rolls, min. width 16 ins., max. width 38 ins. (3-inch iron cores).

John F. Post 4.99c

No. 60—5,000 lbs., blue, buff, cherry, green, pink, salmon, and yellow, No. 26; flat, cut 21x32, 22x34, 24x38, and 28x34 ins. Min. order, one color, 5,000 lbs.

Perkins-Goodwin Co. 7.88c

No. 61—1,100,000 lbs., blue, buff, cherry, green, pink, salmon, and yellow, Nos. 32 and 40; flat, cut 21x32, 22x34, 24x38, 27x35, 28x34, and 32x42 ins. Min. order, one color, 10,000 lbs.

Cauthorne Paper Co. 6.54c

No. 62—50,000 lbs., blue, buff, cherry, green, pink, salmon, and yellow, Nos. 26, 32, and 40; rolls, min. width 17 ins., max. width 38 ins. (3-inch iron cores). Min. order, one substance, one color, 5,000 lbs.

Reese & Reese, Inc. ..... 7.30c[1] 5.96c[2]

[1] No. 26. [2] 32 and 40.

100 Per Cent Rag White Writing

No. 63—2,500 lbs. No. 56; flat, cut 21x32 ins. Min. order 2,500 lbs.

Bulkley Dunton & Co. 22.6695c

Lithograph-Finish Map

No. 64—5,000 lbs., Nos. 32 and 40; flat, cut 24x38, 30x40, 32x48, 36x52, and 38x48 ins. Min. order, one substance, 5,000 lbs.

R. P. Andrews Paper Co..... 5.57c

50 Per Cent Rag Lithograph-Finish Map

No. 65—50,000 lbs., Nos. 40, 48, and 56; flat, cut any size, min. weight 25 ins., max. width 48 ins.; the grain to run lengthwise of the sheet.

Barton, Duer & Koch Paper Co. 11.866c

75 Per Cent Rag Lithograph-Finish Map

No. 66—100,000 lbs., Nos. 32 and 40; flat, cut any size, min. width 24 ins., max. width 48 ins.; the grain to run lengthwise of the sheet.

Barton, Duer & Koch Paper Co. 16.813c

No. 67—50,000 lbs., Nos. 48 and 56; flat, cut any size, min. width 30 ins., max. width 48 ins.; the grain to run lengthwise of the sheet. Min. order, one substance, 5,000 lbs.

Barton Duer & Koch Paper Co..... 16.813c

100 Per Cent Rag White Chart, Lithograph-Finish

No. 69—200,000 lbs., No. 96; flat, cut any size, min. width 22 ins., max. width 46 ins.; 4-inch band around each 500

sheets; the grain to run length-wise of the sheet unless otherwise specified.

Reese & Reese, Inc. 21.0205c

Sulphite Manifold, White and Colored

No. 70—100,000 lbs., white, Nos. 16 and 18; flat, cut 21x32, 22x34, and 28x34 ins.; the grain to run the 21-inch way on the 21x32-inch size.

Whitaker Paper Co. ..... 10.30c[1]
Orchard Paper Co. ..... 7.55c[2]

[1] No. 16. [2] No. 18.

No. 71—80,000 lbs., blue, buff, cherry, green, pink, salmon, and yellow, No. 18; flat, cut 21x32, 22x34, and 28x34 ins.; the grain to run the 21-inch way on the 21x32-inch size. Min. order, one color, 5,000 lbs.

Orchard Paper Co. 8.55c

No. 72—3,000 lbs., blue, buff, cherry, green, pink, salmon, and yellow, No. 18; rolls, min. width 17 ins., max. width 38 ins. (3-inch iron cores). Min. order, color, 3,000 lbs.

Orchard Paper Co. 8.05c

50 Per Cent Rag Manifold, White and Colored

No. 73—30,000 lbs., white, No. 14; flat, cut 21x32, 22x34, 28x34, and 38x48 ins.; the grain to run the 21-inch way on the 21x32 inch size. Min. order 5,000 lbs.

Barton, Duer & Koch Paper Co. 18.9125c

No. 74—400,000 lbs., white, No. 18; flat, cut 21x32, 22x34, 24x38, and 28x34 ins.; the grain to run the 21-inch way on the 21x32-inch size.

J. W. Butler Paper Co. 16.15c

No. 75—15,000 lbs., blue, buff, cherry, green, pink, salmon, and yellow, No. 14; flat, cut 21x32, 22x34, and 28x34 ins.; the grain to run the 21-inch way on the 21x32-inch size. Min. order, one color, 3,000 lbs.

Barton, Duer & Koch Paper Co. 23.375c

No. 76—80,000 lbs., blue, buff, cherry, green, pink, salmon, and yellow, No. 18; flat, cut 21x32, 22x34, 24x38, and 28x34; the grain to run the 21 in. way on the 21x32-inch size. Min. order, one color, 5,000 lbs.

J. W. Butler Paper Co. 20.1875c

100 Per Cent Rag Manifold White and Colored

No. 78—5,000 lbs., white, No. 14; flat, cut 17x28, 19x24, 21x32, and 22x34 ins.; the grain to run the 21-inch way on the 21x32-inch size. Min. order 5,000 lbs.

Old Dominion Paper Co. 40.0435c

No. 79—20,000 lbs., white, No. 18; flat, cut 17x28, 19x24, 21x32, and 22x34 ins., the grain to run the 21-inch way on the 21x32-inch size. Min. order 5,000 lbs.

Old Dominion Paper Co. 31.1355c

No. 80—2,000 lbs., blue, buff, cherry, green, pink, salmon, and yellow, No. 14; flat, cut 17x28, 19x24, 21x32, 22x34, and 24x32 ins.; the grain to run the 21-inch way on the 21x32-inch size. Min. order, one color, 2,000 lbs.

Old Dominion Paper Co. 41.225c

No. 81—2,000 lbs., blue, buff, cherry, green, pink, salmon, and yellow, No. 18; flat, cut 17x28, 21x32, 22x34, and 24x38 ins.; the grain to run the 21-inch way on the 21x32-inch size. Min. order, one color, 2,000 lbs.

Old Dominion Paper Co. 32.0535c

50 Per Cent Rag White Glazed Manifold

No. 83—50,000 lbs., No. 16; flat, cut 19x24 and 21x32 ins.; the grain to run the 21-inch way on the 21x32-inch size. Min. order, 20,000 lbs.

Old Dominion Paper Co. 20.40c

Sulphite Bond, White and Colored

No. 101—5,000 lbs., white, No. 26; flat, cut any size, min. width 17 ins., max. width 32 ins. Min. order 5,000 lbs.

Whitaker Paper Co. 7.51c

No. 102—500,000 lbs., white, Nos. 32 and 40; flat, cut any size, min. width 17 ins., max. width 32 ins.

American Writing Paper Co. 6.06c

No. 103—5,000 lbs., white, No. 48; flat, cut any size, min. width 17 ins., max. width 32 ins. Min. order 5,000 lbs.

Perkins-Goodwin Co. 6.06c

No. 104—4,000 lbs., blue, buff, cherry, green, pink, salmon, and yellow, Nos. 32 and 40; flat, cut any size, min. width 17 ins., max. width 32 ins. Min. order, one substance, one color, 2,000 lbs.

Perkins-Goodwin Co. 7.03c

No. 105—2,000 lbs., blue, buff, cherry, green, pink, salmon, and yellow, No. 48; flat, cut any size, min. width 17 ins., max. width 32 ins. Min. order, one color, 2,000 lbs.

Perkins-Goodwin Co. 7.03c

25 Per Cent Rag, Bond, White and Colored

No. 109—120,000 lbs., white, No. 26; flat, cut 21x32, 23x36, 24x38, and 28x34 ins.

Aetna Paper Co. 10.88c

No. 110—300,000 lbs., white, No. 32; flat, cut any size, min. width 17 ins., max. width 32 ins.

Whiting Paper Co. 8.999c

No. 111—600,000 lbs., white, No. 40; flat, cut any size, min. width 17 ins., max. width 32 ins.

Aetna Paper Co. 8.48c

No. 112—600,000 lbs., white, No. 40; flat, cut any size, min. width 17 ins., max. width 32 ins.

Aetna Paper Co. 8.48c

No. 113—600,000 lbs., white, No. 48; flat, cut any size, min. width 17 ins., max. width 32 ins.

Aetna Paper Co. 8.38c

No. 114—50,000 lbs., blue, buff, cherry, green, pink, salmon, and yellow, No. 26; flat, cut any size, min. width 17 ins., max. width 32 ins. Min. order, one color, 5,000 lbs.

Whiting Paper Co. 11.906c

No. 115—250,000 lbs., blue, buff, cherry, green, pink, salmon, and yellow, No. 32; flat, cut any size, min. width 17 ins., max. width 32 ins.

Whiting Paper Co. 9.749c

No. 116—250,000 lbs., blue, buff, cherry, green, pink, salmon, and yellow, No. 40; flat, cut any size, min. width 17 ins., max. width 32 ins.

Whiting Paper Co. 9.749c

No. 117—250,000 lbs., blue, buff, cherry, green, pink, salmon, and yellow, No. 48; flat, cut any size, min. width 17 ins., max. width 32 ins.

Whiting Paper Co. 9.749c

50 Per Cent Rag Bond, White and Colored

No. 120—25,000 lbs., white, No. 26; flat, cut 21x32, 23x36, 24x38, and 28x34 ins.

Graham Paper Co. 14.807c

No. 121—500,000 lbs., Nos. 32 and 40; flat, cut any size, min. width 17 ins., max. width 32 ins.

Aetna Paper Co. 11.951c

No. 122—200,000 lbs., white, No. 48; flat, cut any size, min. width 17 ins., max. width 32 ins.

Graham Paper Co. 11.951c

No. 123—20,000 lbs., blue, buff, cherry, green, pink, salmon and yellow, Nos. 26, 32, and 40; flat, cut any size, min. width 17 ins., max. width 32 ins. Min. order, one color, one substance, 2,500 lbs.

Aetna Paper Co. ..... 15.6315[1] 12.7755[2]

[1] No. 26. [2] Nos. 32 and 40.

75 Per Cent Rag White Bond

No. 125—2,500 lbs., No. 26; flat, cut any size, min. width 17 ins., max. width 32 ins. Min. order 2,500 lbs.

Bulkley Dunton & Co. 20.8845c

No. 126—2,500 lbs., Nos. 32, 40, and 48; flat, cut any size, min. width 17 ins., max. width 32 ins. Min. order, one substance 2,500 lbs.

Bulkley Dunton & Co. 16.898c

100 Per Cent Rag White Bond

No. 128—8,000 lbs., Nos. 32 and 40; flat, cut any size, min. width 17 ins., max. width 32 ins. Min. order, one substance 2,000 lbs.

R. P. Andrews Paper Co. 22.6695c

No. 129—5,000 lbs., No. 48; flat, cut any size, min. width 17 ins., max. width 32 ins. Min. order, 2,000 lbs.

R. P. Andrews Paper Co. 22.6695c

100 Per Cent Rag Declaration Bond

No. 140—3,000 lbs., Nos. 32 and 40; flat, cut 17x22 and 22x25½ ins. Min. order, one substance, 3000 lbs.

Old Dominion Paper Co. 22.6695c

100 Per Cent Rag Parchment Deed

No. 141—2,000 lbs., No. 64; flat, cut 33x34 ins. Min. order 2,000 lbs.

Old Dominion Paper Co. 22.6695c

Sulphite Ledger, White and Colored

No. 151—20,000 lbs., white, Nos. 56 and 64; flat, cut any size, min. width 17 ins., max. width 32 ins. Min. order, one substance, 10,000 lbs.

Champion Coated Paper Co. 6.54c

No. 152—120,000 lbs. white, No. 80; flat, cut any size, min. width 17 ins., max. width 32 ins. Min. order, 10,000 lbs.

Whitaker Paper Co..... 6.54c

No. 153—2,000 lbs., blue, buff, green, pink, salmon, and yellow, No. 80; flat, cut 21x32½ ins. Min. order, one color, 2,000 lbs.

Champion Coated Paper Co..... 7.51c

25 Per Cent Rag Ledger, White and Colored

No. 154—15,000 lbs., white, Nos. 48 and 56; flat, cut 20x28, 21x32, 24x38, 28x29, and 28x34 ins. Min. order, one substance, 5,000 lbs.

Whiting Paper Co..... 9.749c

No. 155—5,000 lbs., white, No. 64; flat, cut 21x32, and 23x36 ins. Min. order 5,000 lbs.

Whiting Paper Co. 9.749c

No. 156—10,000 lbs., white, No. 72; flat, cut 20x28, 21x32, 24x38 and 28x34 ins. Min. order, 5,000 lbs.

Whiting Paper Co..... 9.749c

No. 157—8,000 lbs., blue, buff, green, pink, salmon, and yellow, Nos. 56, 64, and 72; flat, cut 21x32, 23x36, 24x38, and 28x34 ins. Min. order, one substance, one color, 3,000 lbs.

Whiting Paper Co..... 10.499c

50 Per Cent Rag Ledger, White and Colored

No. 160—70,000 lbs., white, Nos. 48 and 56; flat, cut 18½x36, 18½x40¼ 20x28, 21x32, 24x38, 28x29, and 28x34 ins. Min. order, one substance, 10,000 lbs.

Perkins Goodwin Co..... 12.7755c

No. 161—30,000 lbs., white, No. 64; flat, cut 21x32 and 23x36 ins. Min. order 10,000 lbs.

Old Dominion Paper Co..... 12.7755c

No. 162—50,000 lbs., white, Nos. 72 and 80; flat, cut 20x28, 21x32, 24x38, and 28x34 ins. Min. order 10,000 lbs.

R. P. Andrews Paper Co..... 12.7755c

No. 163—30,000 lbs., white, No. 88; flat, cut 21x32½ ins. Min. order 10,000 lbs.

J. W. Butler Paper Co..... 12.7755c

No. 164—80,000 lbs., blue, buff, cherry, green, pink, salmon, and yellow, Nos. 56, 64, and 72; flat, cut 18½x36, 18½x40¼, 19x24, 21x32, and 23x36, and 28x34 ins. Min. order, one substance, one color, 5,000 lbs.

Perkins Goodwin Co..... 13.60c

No. 165—15,000 lbs., blue, buff, cherry, fawn, green, pink, salmon, and yellow, No. 88; flat, cut 21x32½ ins. Min. order, one color, 5,000 lbs.

Perkins Goodwin Co..... 13.60c

75 Per Cent Rag Ledger, White and Colored

No. 168—20,000 lbs., white, Nos. 48 and 56; flat, cut 21x32, 24x38, 28x29, and 28x34 ins. Min. order, one substance, 5,000 lbs.

Walker Goulard Plehn Co..... 17.7225c

No. 169—15,000 lbs., white, No. 64; flat, cut 21x32, 23x36, 24x38, and 28x34 ins. Min. order 5,000 lbs.

Walker Goulard Plehn Co..... 17.7225c

No. 170—15,000 lbs., white, Nos. 72 and 80; flat, cut 20x28, 21x32, 24x38, and 28x34 ins. Min. order, one substance, 5,000 lbs.

Stanford Paper Co..... 17.7225c

No. 171—20,000 lbs., white, No. 88; flat, cut 21x32½ ins. Min. order 5,000 lbs.

George W. Millar & Co..... 17.7225c

No. 172—12,000 lbs., blue, buff, cherry, green, pink, salmon, and yellow, Nos. 56, 64 and 72; flat, cut 21x32, 23x36 24x38, and 28x34 ins. Min. order, one substance, one color, 3,000 lbs.

Perkins Goodwin Co..... 18.547c

No. 173—4,000 lbs., blue, buff, cherry, fawn, green, pink, salmon, and yellow, No. 88; flat, cut 21x32½ in. Min. order, one color, 4,000 lbs.

Perkins Goodwin Co..... 18.547c

100 Per Cent Rag White Ledger

No. 176—10,000 lbs., No. 48; flat, cut 21x32, 22¾x31½, 23x36, 24x38, and 28x34 ins. Min. order 5,000 lbs.

Mathers-Lamm Paper Co..... 23.494c

No. 177—10,000 lbs., No. 56; flat, cut 20x28, 21x32, 23x36, 24&38, and 28x34 ins. Min. order 5,000 lbs.

Mathers-Lamm Paper Co..... 23.494c

No. 178—10,000 lbs., No. 64; flat, cut 18½x42, 21x32, 23x36, and 28x34 ins. Min. order 5,000 lbs.

Mathers-Lamm Paper Co..... 23.494c

No. 179—5,000 lbs., white, No. 72; flat, cut 20x28, 21x32, 24x38, and 28x34 ins. Min. order, 5,000 lbs.

Baltimore Paper Co..... 23.494c

No. 180—4,000 lbs., No. 80; flat, cut 21x32½ and 21x42 ins. Min. order 4,000 lbs.

Baltimore Paper Co..... 23.494c

No. 181—10,000 lbs., No. 88; flat, cut 20½x24¾, 21x32½, and 22¾x31½ ins. Min. order, 5,000 lbs.

Walker Goulard Plehn Co. 23.494c

Sulphite Index, White and Colored

No. 184—60,000 lbs., white, 22½x28½—182 and 230; flat, cut 21x32½, 22½x28½, and 24½x32½ ins., with projecting colored-paper marker between each 100 sheets. Min. order, one weight, 10,000 lbs.

Virginia Paper Co. 6.06c

No. 185—2,000 lbs., white, 22½x28½—280 and 362; flat, cut 21x32½ and 22½x28½ ins., with projecting colored-paper marker between each 100 sheets. Min. order, one weight, 2,000 lbs.

Whitaker Paper Co. 6.30c

No. 186—2,000 lbs., blue, buff, fawn, green, pink, salmon, and yellow, 22½x28½—182 and 230; flat, cut 21x32½, and 22½x28½ ins., with projecting colored-paper marker between each 100 sheets. Min. order, one color, one weight, 2,000 lbs.

Mathers-Lamm Paper Co. 6.79c

No. 187—2,000 lbs., blue, buff, fawn, green, pink, salmon, and yellow, 22½x28½—280 and 362; flat, cut 21x32½ and 22½x28½ ins., with projecting colored-paper marker between each 100 sheets. Min. order, one color, one weight, 2,000 lbs.

Mathers-Lamm Paper Co. 6.79c

50 Per Cent Rag Index, White and Colored

No. 190—300,000 lbs., white, 22½x28½—182 and 230; flat, cut 21x32½ and 22½x28½ ins., with projecting colored-paper marker between each 100 sheets. Min. order, one weight, 10,000 lbs.

Aetna Paper Co. 11.866c

No. 191—20,000 lbs., white, 22½x28½—280 and 362; flat, cut 21x32½ and 22½x28½ ins., with projecting colored-paper marker between each 100 sheets. Min. order, one weight, 5,000 lbs.

Barton, Duer & Koch Paper Co. 11.866c

No. 192—150,000 lbs., blue, buff, fawn, green, pink, salmon, and yellow, 22½x28½—182 and 230; flat, cut 21x32½ and 22½x28½ ins., with projecting colored-paper marker between each 100 sheets. Min. order, one weight, 5,000 lbs.

Barton, Duer & Koch Paper Co..... 12.6565c

No. 193—10,000 lbs., blue, buff, fawn, green, pink, salmon, and yellow, 22½x28½—280 and 362; flat, cut 21x32½ and 22½x28½ ins., with projecting colored-paper marker between each 100 sheets. Min. order, one color, one weight 5,000 lbs.

Charles Beck Co. 12.6565c

100 Per Cent Rag White Index

No. 196—60,000 lbs., 22½x28½—approximately 206; flat, cut 20½x30½ and 21x32½ ins.

George W. Millar & Co. 20.5785c

White Tissue

No. 197—2,000 lbs., flat, 21x32—18. Min. order 1,000 lbs.

Mathers-Lamm Paper Co. 9.50c

Facing Stereo Tissue

No. 198—500 lbs., 19x25—9; rolls 24 ins. wide (3-inch iron cores). Min. order 500 lbs.

No award.

Coated Cover, Colored

No. 201—30,000 lbs., India tint, light green, light gray, and primrose. Fat, 26½x41—208.

Whitaker Paper Co. 7.35c

25 Per Cent Rag Machine-Finish Cover, Colored

No. 203—15,000 lbs., quaker drab, robin's egg, and terra cotta. Flat, 20x25—96, in wrapped bundles, with projecting colored-paper marker between each 500 sheets. Min. order, one color, 2,500 lbs.

R. P. Andrews Paper Co..... 10.76c

No. 204—80,000 lbs., blue, brown, granite, green, pink, tea, and yellow, 20x26—100; flat, cut 20x24 and 33x46 ins., in wrapped bundles, with projecting colored-paper marker between each 500 sheets. Min. order, one color, 5,000 lbs.

R. P. Andrews Paper Co. 10.76c

50 Per Cent Rag Laid Cover, Colored

No. 205—80,000 lbs., (manufacturer's stock shades as selected), blue, buff, cream white, gray, green, and terra cotta, 20x26—130; flat, cut 20x25 and 26½x41 ins., in wrapped bundles, with projecting colored-paper marker between each 500 sheets. Min. order, one color, 2,000 lbs.

R. P. Andrews Paper Co. 13.09c

50 Per Cent Rag Antique Cover, Colored

No. 206—25,000 lbs., dawn, gobelin-blue, khaki, moss-green, sage, and suede, flat, 20x25—96, in wrapped bundles, with projecting colored-paper marker between each 500 sheets. Min. order, one color 5,000 lbs.

R. P. Andrews Paper Co. 12.56c

Wood Manila

No. 209—80,000 lbs., 24x36—80 to 120; flat, cut 21x32, 22½x34½, and 25x38 ins., in wrapped bundles with projecting colored-paper marker between 500 sheets.

Old Dominion Paper Co. 3.75c

No. 210—150,000 lbs., 34x36—80 to 120; rolls, 18 and 21 ins. wide (3-inch iron cores).

Old Dominion Paper Co..... 3.50c

Sulphite Manila

No. 211—30,000 lbs., 24x36—100 to 160; flat, cut any size, in wrapped bundles. Min. order, one weight, 5,000 lbs.

Perkins-Goodwin Co..... 5.12c

Rope Manila

No. 213—50,000 lbs., 24x36—120, 140, and 160; rolls 18 and 48 ins. wide (3-inch iron cores). Min. order 5,000 lbs.

Reese & Reese, Inc..... 10.50c

No. 214—30,000 lbs., 24x36—280; rolls, 48 ins. wide (3-inch iron cores). Min. order 5,000 lbs.

Reese & Reese, Inc..... 10.00c

Drumhead Manila

No. 215—10,000 lbs., 24x36—280; flat, cut 26x42 ins. Min. order 5,000 lbs.

Reese & Reese, Inc..... 14.00c

No. 2 Kraft

No. 217—80,000 lbs., 24x36—80 to 160; flat, cut any size, in wrapped bundles.

J. W. Butler Paper Co..... 4.04c

No. 218—200,000 lbs., 24x36—80 to 160; cut any size, folded (25 sheets per fold), in wrapped bundles.

Enterprise Paper Co..... 4.04c

No. 219—200,000 lbs., 24x36—80 to 160; rolls, 9, 11½, 24, 36, 39 and 48 ins. wide, wound on wooden plugs, 1½-inch hole, or on 3-inch iron cores as may be specified.

J. W. Butler Paper Co..... 3.79c

No. 1 Kraft

No. 220—10,000 lbs., 24x36—120 and 160; flat, cut any size, in wrapped bundles.

R. P. Andrews Paper Co. 4.28c

White Paraffin

No. 251—1,000 lbs., flat, 24x38—32. Min. order 1,000 lbs.

Enterprise Paper Co. 8.26c

White Gummed

No. 252—200,000 sheets, flat, 17x22—40, exclusive of weight of gum used. Min. order 50,000 sheets.

Virginia Paper Co..... $4.532 per M sheets

Blotting, White and Colored

No. 254—12,000 lbs., white, flat, 19x24—160, in wrapped bundles. Min. order 4,000 lbs.

R. P. Andrews Paper Co. 7.76c

No. 255—2,000 lbs., (manufacturer's stock shade), buff and salmon, flat, 19x24—160, in wrapped budles. Min. order 2,000 lbs.

R. P. Andrews Paper Co. 7.76c

25 Per Cent Rag Blotting, White and Colored

No. 256—10,000 lbs., white, flat, 19x24—160, in wrapped bundles. Min. order 10,000 lbs.

R. P. Andrews Paper Co. 9.21c

No. 257—2,000 lbs., (manufacturer's stock shade), buff and salmon. Flat, 19x24—160, in wrapped bundles. Min. order, one color, 2,000 lbs.

R. P. Andrews Paper Co. 9.70c

Desk Blotting, Colored

No. 258—5,000 lbs., (manufacturer's stock shade), blue and buff, flat 19x24—200, in wrapped bundles. Min. order, one color, 5,000 lbs.

R. P. Andrews Paper Co. 7.76c

No. 259—50,000 lbs., moss-green (manufacturer's stock shade). Flat, 19x24—200, in wrapped bundles. Min. order 10,000 lbs.

R. P. Andrews Paper Co. 7.76c

White Stereotype Molding

No. 260—1,000 lbs., 19x24—120; rolls, 24 ins. wide (3-inch iron cores). Min. order 1,000 lbs.

Cauthorne Paper Co. 9.21c

Red Stereotype Molding

No. 261—1,000 lbs., 19x24—80; rolls, 24 ins. wide (3-inch iron cores). Min. order 1,000 lbs.

Cauthorne Paper Co. 9.21c

Oiled Manila Tympan

No. 262—15,000 lbs., 24x36—approximately 200; rolls, 38 and 48 ins. wide; 10-inch diameter; wound on wooden plugs, 1½-inch hole. Min. order 5,000 lbs.

R. P. Andrews Paper Co..... 6.40c

Plate-Wiping, for Embossing Presses

No. 263—4,000 lbs., 24x36—100; rolls, 24 ins. wide (3-inch iron cores). Min. order 1,000 lbs.

Barton, Duer & Koch Paper Co. 6.10c

Back-Lining, for Case-Making Machines

No. 264—2,000 lbs., 24x36—180; rolls, 24 ins. diameter, 37 ins. wide (3-inch iron cores). Min. order 2,000 lbs.

Mathers-Lamm Paper Co. 3.46c

High-Finish Red Sulphite

No. 265—10,000 lbs., flat, 24x36—320 and 400, in wrapped bundles. Min. order 5,000 lbs.

Reese & Reese, Inc. 5.63c

High-Finish Sulphite Manila Tag

No. 271—60,000 lbs., 24x36—160 to 280; flat, cut any size, min. width 24 ins., max. width 38 ins., in wrapped bundles.

Old Dominion Paper Co. 5.50c

Calendered Tag, Manila and Colored

No. 276—800,000 lbs., Manila, 22½x28½—approximately 148; rolls, 23¼ and 26½ ins. wide (6-inch iron cores).

Barton, Duer & Koch Paper Co. 7.00c

No. 277—100,000 lbs., blue, brown, green, pink, red, salmon, and yellow, 22½x28½—approximately 148; rolls, 23¼ and 26½ ins. wide (6-inch iron cores). Min. order, one color, 10,000 lbs.

Barton, Duer & Koch Paper Co. 7.75c

Jute Tag

No. 280—50,000 lbs., 22½x28½—200 to 280; flat, cut 22½x28½ ins., in wrapped bundles. Min. order, one weight, 10,000 lbs.

Reese & Reese, Inc. 6.86c

Manila Board

No. 281—30,000 lbs., 22½x28½—400; flat, cut 17x28, 21x32, and 22½x28½ ins., in wrapped bundles with projecting colored-paper marker between each 100 sheets. Min. order 10,000 lbs.

Reese & Reese, Inc. 4.1225c

Railroad Board, White and Colored

No. 302—40,000 sheets, white, flat, 22x28 ins., 4-ply, each 100 sheets fully banded, packed in wooden cases. Min. order 10,000 sheets.

Whitaker Paper Co..... $21.22 per M sheets

No. 303—20,000 sheets, white, flat, 22x28 ins., 8-ply, each 100 sheets fully banded, packed in wooden cases. Min. order 5,000 sheets.

Whitaker Paper Co..... $32.16 per M sheets

No. 304—25,000 sheets, white, flat, 22x28 ins., 14-ply, each 50 sheets fully banded, packed in wooden cases. Min. order 5,000 sheets.

Whitaker Paper Co..... $48.50 per M sheets

No. 305—25,000 sheets, ash gray, blue, buff, green, lemon, and orange, flat, 22x28 ins., 4-ply, each 100 sheets fully banded, packed in wooden cases. Min. order, one color, 5,000 sheets.

Whitaker Paper Co..... $27.94 per M sheets

Wood Bristol, Colored

No. 306—40,000 lbs., buff, 22½x28½—150; rolls 22 ins. wide (6-inch iron cores).

Reese & Reese, Inc..... 4.85c

No. 307—60,000 lbs., blue, buff, gray, green, melon, pink, quaker-drab, and yellow, flat, 21x31—204, in wrapped bundles, with projecting colored-paper marker between each 100 sheets.

Reese & Reese, Inc..... 4.85c

No. 308—100,000 lbs., blue, brown, buff, gray, green, melon, pink, and yellow, 22½x28½—200; rolls 20 ins. wide (6-inch iron cores).

Reese & Reese, Inc..... 4.85c

No. 309—100,000 lbs., blue, brown, buff, gray, green, melon, pink, and yellow, 22½x28½—200; rolls 20 ins. wide (6-inch iron cores).

Reese & Reese, Inc..... 4.85c

No. 310—30,000 lbs., buff, 22½x28½—200; flat, cut 12x18 and 14½x17½ ins., the grain to run lengthwise of the sheet, in wrapped bundles with projecting colored-paper marker between each 100 sheets.

Reese & Reese, Inc..... 4.85c

United States Postal Card Bristol

No. 325—6,000,000 lbs., 22½x28½—188; rolls 33 ins. wide and 34 ins. in diameter (6-inch iron cores).

Whitaker Paper Co., Half total amt..... 4.25c
R. P. Andrews Paper Co., Half total amt. 4.25c

Pressboard, Colored

No. 351—10,000 sheets, red, flat, 24x32 ins., thickness .0140 inch. Min. order 5,000 sheets.

Walker Goulard Plehn Co... $6.27 per 100 sheets

No. 352—8,000 sheets, gray, flat, 30x36 ins., thickness .0300 inch. Min. order 5,000 sheets.

Walker Goulard Plehn Co...$19.03 per 100 sheets

News Board

No. 360—1,000 lbs., flat, 26x38 ins., No. 100. (To be trimmed square on four sides.) Min. order 1,000 lbs.

Reese & Reese, Inc..... 1.725c

Chip Board

No. 361—800,000 lbs., 26x38, No. 50; flat, cut 21½x32½, 24½x38, 26x38, 28½x34½, and 32½x42½ ins.

Mathers-Lamm Paper Co. 1.5436c

Marble Grained Lined Board

No. 362—20,000 lbs., 26x38 ins., No. 50; flat, cut 22x32 ins.

Whitaker Paper Co. 4.28c

Strawboard

No. 363—5,000 lbs., flat, 26x38 ins., No. 50.

No award.

Lined Chip Board

No. 364—5,000 lbs., flat, 26x38 ins., No. 50.

Walker Goulard Plehn Co. 1.92c

Lined Box Board

No. 365—36,000 lbs., 25x38 ins., No. 40; flat, cut 24½x34 ins. Min. order 36,000 lbs.

Walker Goulard Plehn Co. 1.92c

Binder's Board No. 1 Quality

No. 366—250,000 lbs., flat, to trim 25x30 ins., Nos. 16, 18, 20, 25, 30 and 40.

Mathers-Lamm Paper Co. 3.30c

No. 367—50,000 lbs., 25¾x30¾ ins., Nos. 12 and 20; flat, to trim 34x44 ins.

Mathers-Lamm Paper Co. 3.30c

Binder's Board, Best Quality

No. 368—60,000 lbs., flat, to trim 20x30 ins., and 22x28 ins., Nos. 18, 20, 25, 30, 35, 40, and 45.

Barton, Duer & Koch Paper Co. 4.60c

Celotex Reorganization Modified

Additional changes in the proposed plan of reorganization of the Celotex Company were announced over the week end by William B. Nichols, chairman of the reorganization committee. The modified plan will be submitted to the United States District Court at Wilmington, Del., on July 1.

Under the modified plan preferred stockholders will receive one share of new preferred stock and one share of new common stock for each two shares of old preferred held, as against only one share of new preferred under the original plan. Common stockholders will receive one share of new common stock under the modified plan for each three shares of old common held, as against one share for four under the former plan.

The trustees of the estate of the Celotex Company, Colin C. Bell and William Tracy Alden, have filed in the United States District Court for the District of Delaware the audit report of Arthur Young & Co., certified public accountants, showing a combined net loss for the six months ended April 30 of $88,509. The net loss is shown after interest charges, including amortization of discount and expense of funded debt, of $83,012, provision for depreciation of $188,159 and payment of $15,000 on account of services rendered by the receivers and their counsel.

Paper Traffic League Meets

The annual meeting of the Pulp and Paper Traffic League was held recently at the Royal York Hotel, Toronto. It was announced that the League objects to and will oppose the six hour a day bill, the train length bill and the full crew bill, all three of which are pending in U. S. Congress. O. J. McSwain, traffic manager of the Albermarle Paper Manufacturing Co., Richmond, Va. was elected president. J. O. McKerrow, of the Abitibi Power and Paper Company, Toronto, was made vice president and J. Perron, secretary. M. M. Davis, Hammermill Paper Company, Erie, Pa., remains as treasurer and the retiring president, J. A. Quinlan, St. Regis Paper Company, becomes a member of the Board of Directors.

New West Virginia Booklets Out

The West Virginia Pulp and Paper Company has just issued five artistic sample books of a new series showing its Westvaco papers, as follows: Inspiration Offset, Inspiration Book, Inspiration Ledger, Clear Spring Papers, Inspiration Index Bristol, Westvaco Campaign Bristol and Westvaco Postcard. There will be thirteen sample books in all of this series and the remaining eight will be issued in the near future.

Champion Companies Elect Officers

[FROM OUR REGULAR CORRESPONDENT]

DAYTON, Ohio, June 24, 1935—Stockholders of the Champion Coated Paper Company, of Hamilton and the subsidiary Champion Fiber Company of Canton, N. C., held their annual meeting Monday afternoon at the office of the Champion Coated Company on North B street, Hamilton, and re-elected all directors and officers.

Officers of the Champion Coated Paper Company are: Alexander Thomson, president; Logan G. Thomson, vice president and general manager; H. W. Suter, vice president and sales manager; Scott Zoller, secretary-treasurer, and J. L. Henson, assistant secretary-treasurer.

The Champion Coated directorate includes C. C. Benedict, of Cincinnati; H. G. Ponsford, of Cincinnati; Herbert T. Randall of Hamilton, and all officers with the exception of Mr. Henson.

The officers of the Champion Fiber Company who were re-elected are: Alexander Thomson, chairman of the board; Reuben Robertson, of Asheville, N. C., president and general manager; Charles S. Bryant, secretary-treasurer; Logan G. Thomson, vice president; H. W. Suter, vice president; Scott Zoller, assistant treasurer, and Walter J. Damtoft, assistant secretary.

The directorate of the Champion Fiber Company include the officers of the company, with the exception of Mr. Zoller and Mr. Damtoft, together with Herbert T. Randall and Charles C. Benedict.

Reports were submitted covering the business of both companies during the past year and in each instance is pictured continued growth and successful operation.

Consumption of Pulpwood and Production of Wood Pulp During 1934

The consumption of pulpwood and the production of wood pulp in the United States increased 3.6 per cent and 4.6 per cent, respectively, in 1934 as compared with 1933, according to a preliminary report released today by Director William L. Austin, Bureau of the Census, Department of Commerce. The figures for the two years are: Pulpwood consumed—1934, 6,796,659 cords, costing $52,505,807; 1933, 6,561,674 cords, $48,360,790. Wood pulp produced—1934, 4,490,859 tons, valued at $132,100,672; 1933, 4,293,344 tons, $124,556,465.

All figures for 1934, as given in the tables below, are preliminary and subject to revision.

TABLE I

PULPWOOD CONSUMPTION, BY QUANTITY AND COST, BY KIND OF WOOD, FOR THE UNITED STATES: 1934 AND 1933

Kind of Wood	1934 Cords	1934 Cost	1933 Cords	1933 Cost
Total	6,796,659	$52,505,807	6,561,674	$48,360,790
Spruce:				
Domestic	1,535,299	15,631,934	1,495,061	15,794,350
Imported	638,127	7,619,226	576,000	6,927,426
Yellow pine, Southern	1,459,171	6,758,719	1,560,414	6,864,202
Hemlock, domestic and imported	1,428,116	9,906,195	1,112,556	6,764,330
Balsam fir:				
Domestic	290,385	2,573,743	261,466	2,018,343
Imported	86,647	998,588	41,465	446,593
Poplar:				
Domestic	241,001	1,951,108	333,438	3,347,228
Imported	92,271	928,357		
Jack pine	218,116	1,637,493	178,974	1,223,037
White fir	98,166	511,898	154,847	620,510
Beech, birch, and maple	83,996	717,216	93,032	846,715
Tamarack (larch)	12,267	90,065	21,844	147,479
Yellow poplar	73,492	544,281	252,436	1,606,622
Other woods*	303,161	1,707,661		
Slabs and mill waste	236,444	929,323	480,141	1,753,955

* Domestic chestnut, cottonwood, Douglas fir, gum, white pine, willow, and miscellaneous hardwoods not reported separately for both years. In addition, red fir for 1934; domestic basswood, yellow poplar, and imported pine for 1933.

TABLE II

WOOD PULP PRODUCTION, BY QUANTITY AND VALUE, BY PROCESS FOR THE UNITED STATES: 1934 AND 1933

Process	1934 Tons of 2,000 lbs.	1934 Value, f.o.b. mill	1933 Tons of 2,000 lbs.	1933 Value, f.o.b. mill
Aggregate	4,490,859	$132,100,672	4,293,344	$124,556,465
Mechanical, total	1,296,535	23,129,056	1,197,553	23,612,012
Not steamed	1,202,292	21,357,499	1,079,066	21,269,727
Steamed	94,243	1,771,557	118,487	2,342,285
Sulphite, total	1,475,795	63,777,447	1,306,575	53,878,773
Unbleached	661,514	22,517,465	580,102	20,512,621
Bleached	814,281	41,259,982	726,473	33,366,152
Sulphate, total	1,262,734	29,225,853	1,259,351	29,095,663
Unbleached	1,167,257	25,285,224	1,195,938	26,618,287
Bleached	95,477	3,940,629	63,413	2,477,376
Soda, total*	420,201	15,598,835	495,930	17,585,331
Unbleached*	92,929	1,576,569	149,192	2,851,765
Bleached	327,272	14,022,266	346,738	14,733,566
Screenings, total	35,594	369,481	33,935	384,686
Mechanical	1,669	13,766	4,243	45,499
Chemical	33,925	355,715	29,692	339,187

* Includes, for both years, data for semichemical pulp, and in addition, for 1933, data for a small quantity of pulp not covered by items specified; included here to avoid disclosing production of individual establishments.

TABLE III

PULPWOOD CONSUMPTION, BY QUANTITY AND COST, AND WOOD PULP PRODUCTION, BY QUANTITY AND VALUE, BY STATES: 1934

[Statistics are given for all States for which separate figures can be published without disclosing, exactly or approximately, any data for individual establishments. The establishments in certain of the "Other States," however, consumed larger quantities of wood and produced larger quantities of pulp than those in some of the States shown separately].

State	Wood Consumed: Cords	Wood Consumed: Cost	Pulp Produced: Tons of 2,000 lbs.	Pulp Produced: Value, f.o.b. mill
United States	6,796,659	$52,505,807	4,490,859	$132,100,672
Louisiana	519,884	2,146,008	339,602	6,436,240
Maine	1,081,988	10,519,346	833,107	20,412,838
Massachusetts	15,773	163,478	9,479	519,606
Michigan	267,808	2,320,625	188,980	6,057,246
Minnesota	212,940	1,689,954	137,096	4,140,368
New York	465,916	5,803,166	373,978	11,655,787
Oregon	322,287	2,248,699	240,167	5,351,204
Pennsylvania	228,520	2,791,677	127,541	6,190,415
Vermont	12,749	122,942	14,040	290,326
Virginia	381,668	2,207,117	235,221	6,980,374
Washington	1,203,518	7,427,760	709,380	22,912,856
Wisconsin	824,525	7,698,942	520,215	18,770,627
Other States*	1,259,083	7,366,093	762,053	22,382,785

* Alabama, Arkansas, Florida, Maryland, Mississippi, New Hampshire, North Carolina, Ohio, South Carolina, Tennessee, and West Virginia.

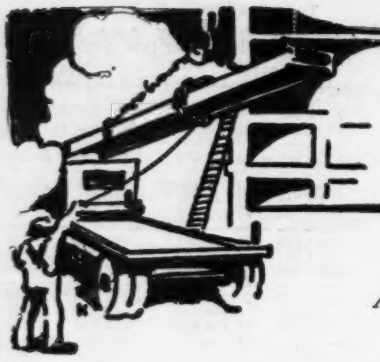
To Represent Brown Co.

Jamie W. Stepp, manager of the printing paper division of Brown Company, Portland, Maine, announces the appointment of the following merchants to represent the Brown Company on their line of printing papers: Van Reed Paper Company, Division of Garrett-Buchanan Company, Reading, Pa.; Charles W. Beers & Co., Division of Garrett-Buchanan Company, Baltimore, Md.; B. W. Bond & Co., Inc., Baltimore, Md.

Norwegian Newsprint Market Fair

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., June 26, 1935—Norwegian newsprint manufacturers report that market conditions have been fairly satisfactory during the spring months, according to Consul General Thomas H. Bevan, Oslo. Most of the Norwegian mills are reported to have experienced no difficulty in selling in advance their full production for the first half of 1935. Approximately 80 per cent of the anticipated 1935 production has been sold. The demand for newsprint so far has been satisfactory and prices have remained more or less stable.



CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Finances and Operation of Paper Mills

Construction News

Middletown, Ohio—The Fairbanks Fibre Box Company, Yankee road and line of Baltimore & Ohio Railroad, manufacturer of fibre boxes and containers, has plans under way for new addition to plant, to be one-story, brick type. It is reported to cost over $35,000, with equipment. Hillsmith & Co., 108 East Third street, Dayton, Ohio, are engineers. Charles L. Blair is secretary and manager.

Bedford, Va.—The Piedmont Label Company, manufacturer of paper specialties, has authorized plans for new addition to plant, comprising a one-story, saw-tooth type structure, totaling about 16,000 square feet of floor space. It is estimated to cost close to $45,000, with equipment. Bids are scheduled to be asked on general contract during the summer. Bryan & Terhune, 2 Rector street, New York, N. Y., are engineers.

Akron, Ohio—The United Envelope Company has been organized with capital of 250 shares of stock, no par value, and will operate a local paper converting plant for manufacture of commercial envelopes and allied paper specialties. New company is headed by E. E. Brennan and Robert J. Hackett. It is represented by Ralph G. Thomas, Second National Bank Building, Akron.

New Orleans, La.—The Great Southern Wirebound Box Company, New Orleans, has begun superstructure for new plant addition for production of corrugated fibre board boxes and containers, recently referred to in these columns. The new plant will be a complete self-contained unit, comprising a fabricating department for the manufacture of fibre board and adjoining converting division. The structure will be one-story, 100 x 400 feet, equipped to give employment to about 100 persons. Large capacity will be developed. Lionel F. Favret, 937 Gravier street, New Orleans, is general contractor for the building. Entire project is estimated to cost about $200,000, with machinery, instead of a smaller sum, previously noted, and is scheduled for completion early in the fall. Diboll & Owen, Canal Bank Building, New Orleans, are architects. D. F. Dixon is president of company, and Earl A. Richard, secretary and treasurer.

Escanaba, Mich.—The Escanaba Paper Company, Groos, near Escanaba, manufacturer of newsprint, etc., is running on a high capacity schedule at mill, giving employment to approximately 245 persons on a full time schedule and about 90 operatives on part-time basis. It is proposed to hold to present operations for an indefinite time.

Wilmington, Del.—The Paper Products Manufacturing Company, Swarthmore, Pa., manufacturer of tissue papers, crepe paper stocks and allied specialties, has active work under way on remodeling and improving its proposed new mill at Wilmington, comprising the former Rockland Mills of the Jessup & Moore Paper Company, recently acquired, as previously noted in these columns. About 40 men are now engaged in the work noted, including installation of new motors and other operating equipment. The mill has been closed for several years. It is understood that the plant will be ready for service early in August. Employment will be given to more than 100 persons for initial operations. The plant will be operated under the name of the Rockland Paper Company. W. S. Sprague is president of purchasing company.

St. Louis, Mo.—The Gaylord Bag and Paper Company, recently organized with capital of $100,000, by C. W. Gaylord, Clayton, Mo., and associates, is said to be planning early operation of local paper converting and distributing plant, for production of paper bags and allied specialties. E. J. Speigel, University City, Mo., is interested in new organization.

Columbus, Ohio—The Scioto Paper Company, 260 East Naughton street, paper products, is considering construction of new storage and distributing building, including office facilities, at East Naughton and Fifth streets, to provide for considerable expansion in present space. No estimate of cost has been announced.

New Castle, Pa.—Fire recently damaged the paper storage building of the Regent Company, West side district. An official estimate of loss has not been announced. The damage will be replaced.

Monroe, Mich.—The Consolidated Paper Company, manufacturer of fibre board, backing board and kindred specialties, is giving employment to more than 2050 persons in different departments of its large local mills, running on a high production schedule. It is proposed to hold to present schedule for an indefinite period.

Muskegon, Mich.—A new terminal for newsprint and other paper stocks, as well as wood pulp, is being constructed by the West Michigan Dock & Market Corporation in the local mart port district. New building will provide for large storage and distributing facilities, and is estimated to cost over $75,000.

Wilmington, Del.—The Delaware Paper Mills, Inc., operating at the former Augustine mills of the Jessup & Moore Paper Company on the Brandywine River, is making improvements in machinery and equipment, preparatory to resumption of production. New equipment will be installed for certain replacements. It is said that the plant will resume operations in the near future. Ward Smith is general manager.

St. Johns, N. F.—The International Power and Paper Company, St. Johns, with mill at Corner Brook, N. F., has plans under way for new one-story storage and distributing building on local waterfront, to handle stocks from the plant. It will be about 75 x 270 feet, and is reported to cost over $75,000, including equipment. Com-

pany is a subsidiary of the International Paper Company, 220 East 42nd street, New York.

Toyama, Japan—The Fuso Shigyo Kaisha, Ltd. (Mulberry Paper Manufacturing Company), has recently been organized with a capital of 1,000,000 yen (about $290,000) as an interest of Mitsui organization, Tokyo, Japan, to operate a new paper mill at Toyama, using mulberry plant bark as raw material for pulp supply. An experimental works for this service will be placed in operation at early date, to be followed by commercial production on a large scale.

Marzura, Japan—Osaka, Ltd., manufacturer of cellulose rayon products, has plans nearing completion for new mill at Marzura, consisting of several large units and group of smaller operating buildings. It is proposed to ask bids on general contract during the summer. New mill is reported to cost over 10,000,000 yen (about $2,900,000), including machinery.

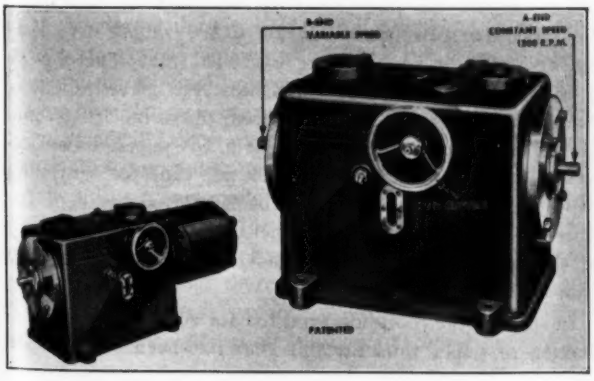
Wenchow, China—The Ministry of Industry, Government of China, Nanking, has plans under advisement for the construction and operation of a new paper mill at Wenchow, where site is being secured. The plant will be devoted to newsprint porduction. It will comprise a group of one-story buildings with power house, water station and other mechanical units, and is reported to cost over $2,000,000, with machinery. It will be equipped for an initial output of about 35 tons of newsprint per day.

Vickers Hydraulic (Oil) Variable Speed Transmission

The Vickers hydraulic (oil) variable speed transmission, represented in the accompanying illustration, consists essentially of a variable stroke multi-cylinder pump that drives a variable stroke multi-cylinder fluid motor. Both the pump and motor are mounted in a case which also serves as an oil reservoir. This transmission has been in commercial use for more than four years under a wide variety of difficult conditions and is in no sense experimental. Because oil is the fluid, all working parts are self-lubricating.

The transmission is driven by a direct connected 1200 r.p.m. motor which is less expensive than slower speed motors. No V-belts and pulleys or speed reducers need be used with motor drive. The unit can also be driven by turbine gas engines, pulleys and belt, etc. Any desired speed between 5 and 700 r.p.m. is secure daccurately, instantly and smoothly by simply turning the hand wheel which varies the stroke and delivery of the multiple piston type pump. Additional adjustments permit speeds up to 2500 r.p.m. Hydraulic, mechanical or electrical remote control can be substituted for manual control.

The power required is always a minimum regardless of the load because the torque is automatically controlled and there is no throttling or by-passing of the oil. Power is not transmitted through universal joints.



There are no exposed parts or piping. Being totally enclosed, the transmission is unaffected by moisture or dirt in the atmosphere. Over-all dimensions of the unit are 25⅞ inches x 17⅛ inches x 17½ inches, and these dimensions can be varied to suit individual requirements.

Units already available have maximum output of 6 hp. continuous duty at 1000 pound/square inch, and 7½ hp. intermittent service at 1250 pound/square inch. Other sizes also will soon be available.

When making inquiries about the Vickers hydraulic variable speed transmission, the following information should be given:

Purpose for which transmission will be used; How will A-End be driven and at what speed; Direction of rotation required (both ends); Horsepower output; Maximum torque and at what r.p.m.; High and low B-End speeds required; Continuous or intermittent service; Handwheel, remote or automatic control; Any unusual conditions.

An interesting bulletin giving the characteristics and advantages of the Vickers hydraulic variable speed transmission may be obtained from the manufacturers, Vickers Incorporated, 1400 Oakman Boulevard, Detroit, Mich.

Union Bag Eliminated in Water Suit

[FROM OUR REGULAR CORRESPONDENT]

HUDSON FALLS, N. Y., June 24, 1935—The Union Bag and Paper Company was eliminated as a defendant this week in the action brought by Amasa W. Howland, Richard J. Howland and M. L. Heidorf against that concern and the Union Bag and Paper Power Corporation under a ruling by Supreme Court Justice Lawrence. Decision was reserved on request for a similar motion by attorneys of the Union Bag Paper and Power Corporation. The suit was brought against both concerns to secure an injunction to restrain the defendants from impounding water upon lands alleged owned by the plaintiffs and for a financial settlement for damages.

Attorneys for the Union Bag and Paper Power Corporation contended that the plaintiffs had failed to show proof of title to the lands involved and that there is no legal proof of ownership of the bed of the river. It was also asserted that the property in question was acquired by the railroad company in 1868 from Henry Lewis, predecessor in title of the Howland property, through condemnation proceedings and that while the plaintiffs may own the bed of the river, as claimed, they do not own the riparian rights. Relative to the claim for damages dismissal was asked on the ground the plaintiffs have failed to prove damages.

The plaintiffs claim ownership of the lands involved by inheritance from their grandfather, Amasa W. Howland, and allege that their property consists of a section of the river bed between Baker Falls and the mill dams.

SKF Engineering Data Sheets

S K F Industries, Inc., Philadelphia, has covered a wide scope of bearing information in its 76-page edition of Engineering Data Sheets just off the press.

Subjects include index of bearing types; selection, mountings and lubrication of ball and roller bearings; self-aligning ball bearings; single row ball bearings; double row ball bearings; spherical roller bearings; cylindrical roller bearings; ball thrust bearings; conversion tables; transmission appliances; district offices; and tables showing principal dimensions, shaft fits and tolerances, housing fits and tolerances, removable sleeves, shaft locknuts and lockwashers, corner radii and shaft fillets.

PAPER TRADE JOURNAL
ESTABLISHED 1872

15 West 47th St., New York, N. Y.

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Price, Per Copy, 10 Cents — United States, Per Annum, $4.00
Canada, including tax, $7.50; Foreign Countries in Postal Union, $6.00

Member Audit Bureau of Circulations

Vol. C — New York, June 27, 1935 — No. 26

A MODEL TRADE PACT

A joint committee of the American Arbitration Association and the Trade Association Executives in New York City has developed an outlined plan for self-government in industry, maintenance of wages and hour standards for labor and arbitration of disputes among members of an industry which is one of the most comprehensive plans of this kind yet to be announced. The model agreement which was presented for criticism and discussion at a meeting last week was offered with the explanation that it must be considered only as tentative and subject to revision based on suggestions which those attending the meeting may make after detailed study.

Six basic points covered declaration of policy, valuable consideration, labor and trade practice provisions agreed to, administration, adjudication and adherence and suspension and amendment. The model agreement is intended to carry out, within constitutional limits, the recovery code purposes, the committee explained.

Under the labor provisions, industry members subscribing to the agreements are asked to set up minimum wage rates, maximum hours and a ban against child labor. In trade practice provisions "generally acceptable and non-controversial practices already established should be set up," it was suggested. Among the trade practice points which should be covered were included prohibitions against deceptive advertising and general misrepresentation, commercial bribery, interference with contracts, secret rebates and a number of others.

Trade associations within each industry are suggested as ideal agencies for administration of the agreements. Provision is made for the payment of amounts assessed against an industry member as liquidated damages, but not as a penalty, upon determination of violation of the agreement. An alternative method under which disputes would be handled by arbitrators authorized to award damages within a given limit against violators of the agreement was submitted. The American Arbitration Association's rules, it was decided, would govern in all disputes.

To cover the need for a "valuable consideration" necessary to make the contract binding, the committee suggested the following paragraph:—

"This agreement is made in consideration of the assurances of the —— Association to administer its provisions and execute its duties as herein contained and to secure similar consents from at least —— other members of the industry and in consideration of —— members of the industry becoming signatories hereto and being bound by the provisions hereof; each subscriber so subscribing upon consideration of the like subscription by others."

The agreement, it was pointed out, should be made operative only after a given percentage representing either a majority of units of the industry or of the production capacity or sales volume is obtained. The contracts are proposed to run for a year and to be renewable for similar periods subject to cancellation at the end of any year by any signatory who gives the association sixty days' notice of an intention to cancel.

BASIC CONDITIONS STRENGTHENING

While there has been an improvement in the general paper trade thus far this year, in many divisions the gains are being narrowed, as compared with those set down for the first quarter, and the trend appears to be toward a slow but continuous retrenchment as the Summer months approach. There are innumerable indications, however, that basically conditions in the industry are strengthening, with the price structure firm, new uses being devised constantly for its products, and better grades coming more into prominence, in keeping with the country's rising purchasing power.

Because of the adverse weather conditions during April and May, which restricted consumer buying in most parts of the country, both output and distribution for the five months of the current year failed to equal the percentage of gain estimated at the beginning of 1935. As the trend again has started upward, much of this slack may be taken in before the close of the third quarter, as wholesalers now are displaying more willingness to make commitments beyond immediate requirements. For some divisions of the trade the fall outlook is viewed as the brightest in several years.

In spite of the poor showing made by the newsprint division, tonnage output is ahead of the comparative 1934 figures, and distribution has exceeded that level by an even wider percentage. Profits, however, have fallen, to some extent, because of increased operating costs and keener sales competition. Exports of paper have expanded, the gains ranging from 9 per cent for wrapping paper to 46 per cent for paper bags, and 60 per cent for waterproof and greaseproof papers, according to a survey of the paper industry, which has just been completed by Dun & Bradstreet, Inc.

In spite of the recession reported for some districts, production of paper thus far this year has been 5 to 10 per

cent in excess of that turned out during the corresponding months of 1934, the volume increase representing tonnage, as price fluctuations have been narrow. Industrial expansion undoubtedly has played an important role in the widening distribution of paper, as manufacturers are turning more and more to paper for packing purposes, a more insistent call having developed particularly in the furniture, hardware, brewery, confectionery, and apparel trades.

The poorest showing was reported for the South, as many of the manufacturers there failed to equal their output figures of a year ago. In the New England States, on the other hand, mills were so well occupied on current orders that no supplies were left for stock, and employment was larger than in 1934. Increases in operating schedules practically were general in the Wisconsin pulp and paper mills, and both employment and pay rolls have shown successive monthly increases thus far this year.

The course of newsprint production in 1935 has not paralleled the steady upward trend followed during the first five months of 1934. After the total output of mills in the United States and Canada dropped to 251,110 tons in February, production was steadily higher in March, April and May. The total for the latter month, however, of 327,016 tons was smaller by 5,249 tons, or 1.5 per cent than the output of 332,265 tons in May, 1934. Total production for the first five months of 1935 was 1,437,096 tons, a drop of 0.68 per cent from the comparative 1934 output of 1,446,963 tons.

Even though some of the gains of the first quarter were lost during April and May, wholesale distribution of paper for the elapsed five months of the current year ranged from 5 to 12 per cent larger than for the comparative period of 1934. Bonds, ledgers, uncoated book papers, and the cheaper grades of prints and wrapping paper headed the list of the best-selling items, with some of the wholesalers of fine paper reporting increases of 25 per cent.

The rising demand for all grades of building paper has lifted the volume 30 to 40 per cent above the average of the last five years. Increased expenditures for advertising have brought more orders from printers, and heavier consumer buying has enlarged sales of wrapping papers. General industrial improvement has benefited manufacturers of paper bags and containers.

In the early months of the year some stocking of paper occurred, chiefly because of fear of higher prices, which failed to develop, so that inventories are estimated at 5 to 8 per cent larger than in 1934. Collections are more satisfactory, the improvement over a year ago averaging 8 to 12 per cent, although most of the smaller printing establishments still are being sold mostly on a cash basis.

On practically all grades of paper, prices have held comparatively firm, continuing at about the level reached during the adjustments made in the Summer of 1934, despite the advances recorded for a few items and the losses for others. Sulphite paper has become somewhat firmer, tissues are steady, and there is more strength noted in the quotations on coarse papers. On the other hand, kraft has turned easier, prices on solid ledged books have weakened, while paper stock, old papers, and mixed paper continue to drag at bottom levels.

The advance of $2.50 a ton in the price of newsprint for the first half of 1935, with another $2.50 to be added for the second half of the year, was rescinded in January, which left the quotation at $40 a ton, at which position it had been pegged since April, 1933, when it was reduced from $45 a ton. While there appears to be no likelihood of changes in the near future, should revisions be made these undoubtedly will be in an upward direction, in view of the decision of mills to maintain code hour and wage schedules.

Weekly Production Ratio Report

Reports to the American Paper and Pulp Association show the following Over-All Production Ratios for the designated periods.

	Reporting Mills		Total Production
	Number	Capacity	Ratio
September, 1934	292–299	.....	59.4%
October, 1934	297–394	.....	64.7
November, 1934	385–399	.....	61.7
December, 1934 (a)	396–404	.....	62.1
January, 1935	397–411	.....	65.8
February, 1935	407–409	.....	70.0
March, 1935	406–408	.....	70.5
April,, 1935	405–407	.....	70.0
May, 1935	367–407	.....	69.3
* Week ending June 8, 1935	360	148,156	70.7
* Week ending June 15, 1935	280	111,620	67.7

Statistics showing the number of mills reporting by ratio groups are given below:

NUMBER OF MILLS REPORTING

	Week Ending	
	June 8	June 15
Ratio Limits	1935	1935
0% to 50%	119	95
51% to 100%	241	185

* Subject to revision.

According to reports from the National Paperboard Association, per cents of operation, based on "Inch-Hours" were as follows:

September, 1934	62 per cent
October, 1934	63 per cent
November, 1934	56 per cent
(a) December, 1934	53 per cent
January, 1935	61 per cent
February, 1935	67 per cent
March, 1935	67 per cent
April, 1935	61 per cent
May 4, 1935	61 per cent
May 11, 1935	61 per cent
May 18, 1935	59 per cent
May 25, 1935	61 per cent
June 1, 1935	57 per cent
June 8, 1935	61 per cent
June 15, 1935	65 per cent

(a) Capacity and percentage data exclude December 25, 1934.

Revised statistics covering delinquent mill returns will be shown in later reports.

New Pulp Mill Construction in Sweden

WASHINGTON, D. C., June 26, 1935—New construction in Sweden includes installation of two new sulphite digesters and the addition of another floor to the drying section of the Bengtsfors Sulphite Mill; installation of large barking drums in the Svano, Svartvik, and Essvik mills, and an electric chemical chlorine factory in connection with the Domsjo mill at Ornskoldsvik. Work at the last is expected to be completed in January 1936, and the production will be approximately 2,500 tons a year, covering the mill's requirements for bleaching chlorine. Munksjo A/B is also extending and rebuilding its sulphite mill near Jonkoping. The capacity will be increased from 4,000 metric tons dry weight to 10,000 to 12,000 tons.

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ZINC SULPHIDE PIGMENTS IN PAPER

Section of the
Technical Association of the Pulp and Paper Industry
Edited by Ronald G. Macdonald, Secretary

TAPPI Fall Meeting Plans Progressing

The chairmen of the various committees handling the plans for the fall meeting of the Technical Association of the Pulp and Paper Industry to be held at the Ambassador Hotel, Atlantic City, September 18 to 21, 1935, met at the home of W. R. Maull at St. Davids, Pa. on Saturday evening, June 15. Those present included C. C. Heritage, W. R. Maull, Mr. and Mrs. H. P. Cannon, W. M. Shoemaker, Jacob Edge, L. T. Derr, H. C. Schwalbe, C. W. Rivise, R. M. Bates, John Roslund, G. E. Landt, B. M. Thomas, E. J. Albert, C. M. Connor, J. C. Harper Jr. and R. G. Macdonald.

Plans for the TAPPI Fall Meeting are rapidly taking shape. The various committees are beginning to show results of their hard work, and all expect to make a report of progress soon.

Wednesday, September 18th, will be spent in Philadelphia, either sight-seeing, or on mill visits. For the ladies, a particularly good program of points of interest, as well as a shopping tour has been laid out that would help to satisfy every taste.

C. M. Connor of the Entertainment Committee will see that transportation is provided to get the members down to Atlantic City in time for the informal buffet supper to be served at the Ambassador Hotel at 7 o'clock. The Entertainment Committee absolutely guarantees that there will be no strangers after this first get-together evening.

The Program Committee and the Entertainment Committee are vieing with each other for the members' interest. The TAPPI technical program for Thursday and Friday, September 19th and 20th, is of a high order and extremely interesting, but the Entertainment Committee with its extremely magnificent program of diversified interests, expects to have the members play so hard and enjoy themselves so thoroughly that they will be cram full of zest and get the most out of the technical program.

The Ladies Committee under the able chairmanship of Mrs. H. P. Cannon, has scheduled a meeting for the committee to finally choose between the many attractions to offer to the visiting ladies, both for the first day in Philadelphia, and for the rest of the time in Atlantic City.

W. M. Shoemaker, Chairman of the Entertainment Committee, is rounding up the work of his sub-committees and he too will shortly have a meeting of his committees to give a broad general outline of the recreation activities promised the members.

One of the greatest advantages of holding the TAPPI Convention at the Ambassador Hotel in Atlantic City is that every form of worth while entertainment and sport is available and at the same time the facilities of the convention itself are so good and the convention is so far removed from the distractions of a large city or the center of Atlantic City, that the attending members can give real attention to the serious work in hand.

The program of the Entertainment Committee will be good, there is no question about that. An announcement of the details of the Program Committee activities for the second day is expected soon. In general it will be the discussion of the particular application of the first day's paper.

The Entertainment Committee was able to make a most advantageous arrangement with the Hotel Ambassador. Rooms in this magnificent hotel range in price for one person from $3.00 per day to $6.00 per day, while the price for two persons in one room ranges from $5.00 per day to $8.00 per day. The splendor of this hotel leaves nothing to be desired and the rates mentioned include the free use of the indoor sea water swimming pool, as well as surf bathing, use of the sun deck and many other desirable features. It is suggested that reservations be made direct with the hotel as soon as possible, as naturally the more desirable rooms will be assigned to those making reservations ea' 'y.

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WILLIAM R. MAULL

Vice President, Dill & Collins, Inc. and General Chairman, TAPPI Fall Meeting Committee

Relation of Paper Properties to Register In Offset Lithography*

By Charles G. Weber[1]

Abstract

Additional information has been obtained on the relation of fiber properties of paper to distortion and poor register in offset printing. Made-to-order papers, in the manufacture of which the fiber characteristics were carefully controlled, were tested in the laboratory and printed on a commercial offset press. Data on the closeness of register in printing were correlated with the properties of the papers and history of manufacture.

In previous studies of papers made in one mill of fibers from the same source, it was found that papers with a minimum of hydration or gelatinization of fibers and a maximum of directional difference or grain had the lowest machine direction expansion and gave best register. By the further tests on papers made in different mills of pulps from widely different sources, these findings were found to apply generally to chemical wood-fiber papers. With the chemical wood papers, best register is obtained when the machine direction coefficient of expansion is lowest. This desirable property is obtained by manufacturing the paper with the minimum of beating and jordanning essential for the required strength and surface quality. For all-rag papers, large directional difference or pronounced grain is apparently not indicative of low expansion and good register.

In previous study of the relation of paper properties to register of successive color prints in offset printing, (*1*) and on the influence of atmospheric changes on paper distortion, (*2*) the mechanical treatment of the paper fibers received in the manufacture of the paper was found to be of great importance. Paper made with a minimum of beating[2] and jordanning[3] gave best register in offset lithography. However, inasmuch as the papers used were from a single mill, and made of pulp from the same source, further studies reported herein were made to determine whether the conclusions based on the previous findings relative to the relationship between fiber properties and distortion in offset printing are of general application. Special papers were prepared for this study by cooperating commercial manufacturers, and the experimental printings were made in the air-conditioned pressroom of the United States Coast and Geodetic Survey, Department of Commerce.

This is one of a series of studies made to assist the lithographers in reducing serious economic losses caused by difficulties in offset color printing. The work is being done in cooperation with the Lithographic Technical Foundation, which assists through an advisory committee composed of lithographers, paper manufacturers, and printing-equipment manufacturers appointed by the foundation.

* Presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., Feb. 18-21, 1935.

[1] Member TAPPI, Asst. Chief, Paper Section, Bureau of Standards, Washington, D. C.

[2] Beating is the term applied to mechanical treatment given papermaking fibers, suspended in water, to prepare them for forming a sheet on the paper machine. Beating separates, brushes, and frays the fibers, and causes them to absorb water by what is commonly termed "hydration."

[3] Jordanning is a refining process that usually follows beating to complete the preparation of papermaking fibers for forming a paper of the desired character. In the jordan, the fibers are freed from lumps and cut to the desired length.

Description and Properties of Paper

The papers used in the experiments were made according to the following specifications:

Group A.—Chemical wood offset papers made in mill "A." Fibers, 75 per cent sulphite, 25 per cent soda, wood pulp. Rosin sizing, 2.3 per cent by weight. Finish, normal. Number 1 made with absolute minimum of beating and jordanning; no. 2 made from the same stock, with maximum of beating and jordanning commonly used in commercial practice.

Group B.—Nos. 3 and 4, duplicates of nos. 1 and 2, respectively, made in mill "B" of pulps from different sources than those used for group A papers.

Group C.—Nos. 5 and 6, duplicates of nos. 1 and 2, respectively, made in a third mill, "C," of pulps from different sources than those used in groups A and B.

Group D.—Nos. 7 and 8, 100-per cent rag papers prepared like nos. 1 and 2, respectively.

Number 9.—A vegetable parchment paper. This type of paper is rendered parchment-like by gelatinizing the fibers with acid, which gives it properties somewhat comparable to a paper hydrated or gelatinized by drastic beating. It was included as being representative of the extreme as regards mechanical treatment of fibers. The test data on the papers are contained in Table I.

The effects of increased beating on the physical properties of the papers may be observed from the data in the table by comparing the properties of the two papers in each group. The odd-numbered papers were made with minimum beating, and the even-numbered ones with the maximum. In general, increased beating decreased the machine direction[4] folding strength sharply with relatively little effect on the cross-direction strength; hence, maximum directional difference, or most pronounced grain, was associated with the minimum of beating and jordanning. The papers in group B might appear to offer an exception, but this is explained by the fact that these two papers actually differed little as regards fiber length, both having been jordanned rather hard. Apparently the difference between them may be attributed to hydration only, this being reflected also in the comparatively small difference in expansion. For all-chemical wood papers, the machine direction expansion was lowest with both beating and jordanning at the minimum; a most important property since register in color printing requires a minimum of distortion in the machine direction of the paper.

Air permeability and rate of oil penetration were both greatly decreased by increased beating, indicating closing of the spaces between the fibers in the paper. The greater degree of curl with increased beating is further indication of this closing of the sheet. Beating had no significant effects on the degree of sizing or opacity.

Register Studies

The special papers were subjected to experimental printings on a commercial offset press, and the closeness of

[4] Machine direction in paper is the direction parallel to its forward movement on the paper machine in manufacture. The direction at right angle to the machine direction is termed "cross-direction."

register of color prints was determined for all papers by measuring with a micrometer rule. (*3*) The press was a 36x48 inch Harris offset model of late design in practically new condition. The cylinder dimensions of the press were

	Plate Inches	Blanket Inches	Impression Inches
Bearers	16.000	16.002	15.976
Body	15.950	15.850	15.986

The press-room atmosphere was controlled with an air-conditioning system of conventional type. During the experiments, 43 ± 4 per cent relative humidity and 75 ± 3 deg. F. were maintained.

In the first series of printings, five sheets of each paper were printed. The papers were conditioned in a cabinet type of conditioning machine in which room air is blown up through the chamber where the papers are hung. The sheets were hung in "lifts" [5] of two sheets each and left in the conditioning machine for approximately 24 hours to assure complete moisture equilbrium with the press-room air. Six-color printings were made, and the register was determined by measuring the length of each succeeding print on both back and gripper edges.

In these printing tests, the same printing pressures were used for all six colors. The pressure [6] between plate and blanket was equivalent to 0.004 inch. The impression cylinder was set up against the blanket cylinder with just sufficient pressure to give a clear print on the first color, and like pressure was used on all six colors. The register of successive prints in this series is shown graphically for the gripper and back edges of the paper in Figs. 1 and 2, respectively. Only the long-direction misregister is shown, because misregister in the short or around-the-cylinder direction is relatively unimportant, as it can be corrected by press adjustment.

It will be noted that, of the chemical wood papers, that is groups A. B, and C, the odd-numbered paper in each group gave better register than the corresponding even-numbered papers in the respective groups. The odd-numbered papers were those prepared with a minimum of beating and jordanning, and having in consequence, the most pronounced gain or directional difference in sheet formation. Paper 9, which was a parchment paper comparable in structure to a paper made with much more drastic mechanical treatment of fibers than any of the other papers, gave correspondingly greater misregister of prints. This further emphasizes the importance of sheet formation with respect to distortion and resulting misregister of prints.

There was no significant difference between the two rag papers in group D with respect to quality of register in these tests.

To obtain further data on these papers, a second series of printings was made under somewhat different conditions. In these tests, five sheets of each paper, with the exception of no. 9 which gave such poor register in the first printings as to require no further study, were printed. The papers were conditioned as for the first series, but were printed as part of a commercial run. The experimental papers were placed at the bottom of a pile of paper being printed on an airway map job, and were not removed for measuring until five colors had been printed. In these printings, the pressure on the plate, cylinder was 0.0033 inch for each of the first two colors, and 0.0035, 0.0030, 0.0040 inch for the third, fourth, and fifth colors, respectively. Register of the fifth color with the first was determined.

As in previous tests with chemical wood papers, those made with the least drastic mechanical treatment of fibers, and having in consequence, the lowest machine direction coefficient of linear expansion, gave the best register. The

[5] By "lift" is meant the number of sheets of paper placed together in the same clips suspending the paper from the top.

[6] On the type of offset press used, the plate cylinder and blanket cylinder rest one against the other on fixed metal bands or bearers at the ends of the cylinders. When the combined heights of the cylinder bodies between the bearers is not greater than the combined heights of the bearers, the pressure between plate and blanket is zero. Pressure is introduced by placing sheet packing under the blanket and plate to bring the combined body heights of the two cylinders above their combined bearer heights. There is no convenient method of determining the actual pressure, and since it is adjusted by increasing or decreasing the amount of packing, pressure is commonly expressed as being equivalent to the difference between the combined body heights and bearer heights.

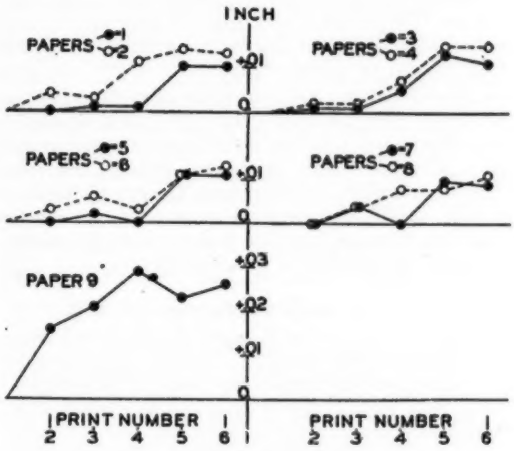

FIG. 1

Relation of prints 2, 3, 4, 5 and 6 to first print length. Gripper edge—40-inch image. Departure from 0 base equivalent to misregister with first color. Odd-numbered papers made with minimum of beating. Pressure on plate cylinder 0.004 inch for all colors.

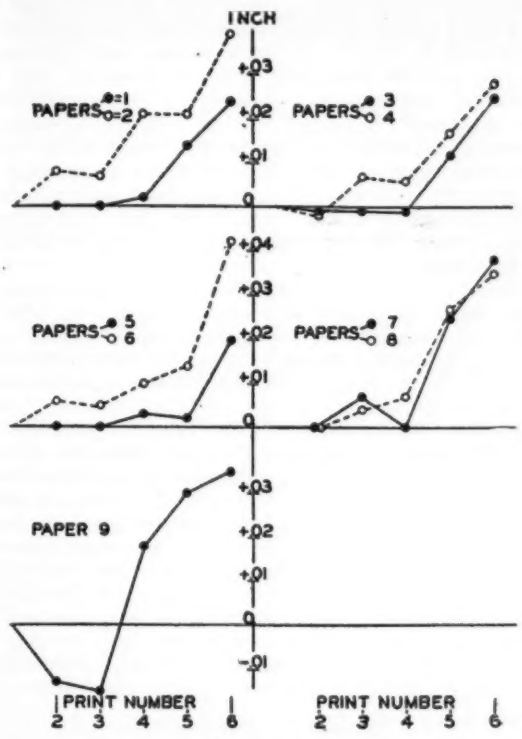

FIG. 2

Relation of prints 2, 3, 4, 5 and 6 to first print length. Back edge—40-inch image. Departure from 0 base equivalent to misregister with first color. Odd-numbered papers made with minimum of beating. Pressure on plate cylinder 0.004 inch for all colors.

relationship between the coefficient of expansion and misregister of prints on the chemical wood papers is shown graphically in Fig. 3. Separate curves show relationship for this and the preceding series of printings and it is significant that similar regularity of the curves shows that misregister increased directly with the coefficient of expansion. The rate of increase, or slope of the curve, is not the same for the 2 different series of printings because many factors such as ink areas, amount of ink and water, printing pressures, etc., which have been found to affect register (*3*) are never duplicated exactly for different printings.

Papers nos. 7 and 8, the all-rag papers made from the same stock with different degrees of beating, did not differ significantly with respect to register in either series of printings. Also, it will be noted in Table I that while they differed as regards strength about as might be expected from the difference in mechanical treatment of the fibers, the machine direction expansion was practically the same for both. It appears, therefore, that the different manner in which rag papers respond to mechanical treatment makes the degree of beating and jordanning, so important in the case of wood fiber papers, of little importance in rag papers with respect to the best sheet formation for low expansion and good register. The well known fact that cotton rag fibers fray out into threadlike fibrillas, and do not hydrate readily on beating, while the ordinary chemical wood fibers hydrate with very little fraying out, may give a clue to the reasons not clearly understood at present for the different behavior of the rag papers.

Summary and Conclusions

The results of trial printings of three groups of special papers made in different mills, of different pulps, confirm previous findings, and justify the following general conclusions relative to chemical wood papers for multicolor offset printing:

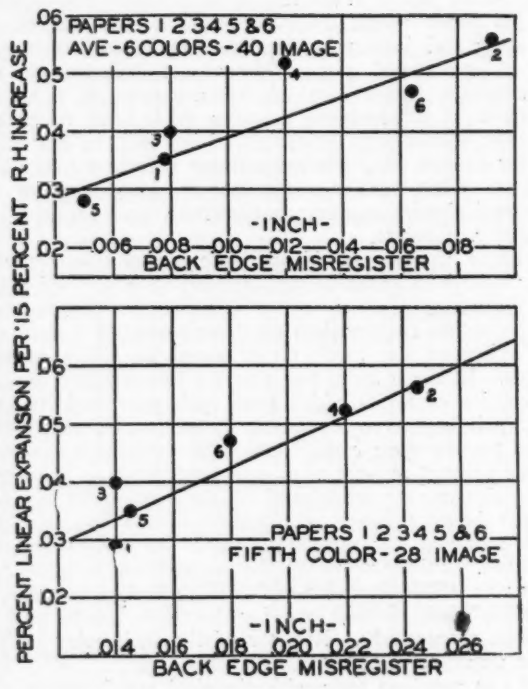
PAPERS 1 2 3 4 5 & 6
AVE-6 COLORS-40 IMAGE
PERCENT LINEAR EXPANSION PER 15 PERCENT R.H. INCREASE
-INCH-
BACK EDGE MISREGISTER
PAPERS 1 2 3 4 5 & 6
FIFTH COLOR-28 IMAGE
-INCH-
BACK EDGE MISREGISTER

FIG. 3

Relation of machine direction coefficient of expansion to misregister. Chemical wood papers. Odd-numbered papers made with minimum of beating.

TABLE I

LITHOGRAPHIC PAPERS—TEST DATA[1]

Properties	Test data on groups, and papers[2] nos.— A 1	A 2	B 3	B 4	C 5	C 6	D 7	D 8	9
Weight (25 x 40 in., 500 sheets) ....lb.	73.1	77.1	72.2	81.9	78.2	76.5	72.8	71.5	68.2
Thickness .....in.	.0054	.0054	.0055	.0058	.0054	.0050	.0051	.0049	.0059
Bursting strength points[9]	26	21	22	27	31	35	26	21	45
Folding endurance[3] machine. dbl. folds	52	8	11	19	480	153	71	28	5,860
cross.... dbl. folds	10	5	7	10	35	89	20	10	8,720
Tensile breaking strength[4] machine .....kg.	6.6	5.7	5.6	7.8	8.8	9.8	6.2	5.5	8.5
cross .....kg.	2.9	2.8	3.3	3.2	3.8	5.2	3.0	2.6	6.2
Degree sizing (dry indicator) .....sec.	45	40	47	59	65	73	20	16	300+
Air permeability[5] $cm^3/sec/m^2/g/cm^2$	149.2	69.0	253.9	107.5	468.0	86.5	196.0	98.9	.003—
Oil permeability[6] (castor oil) ...sec.	150	240	103	240	65	266	123	139	7200+
Curl[7] .....deg.	50	65	28	48	11	23	45	65	180+
Expansion[8] per 15 per cent R.H. increase (machine direction) ...per cent	.035	.056	.040	.052	.028	.047	.034	.038	.217
Opacity ....per cent	93	95	93	94	96	94	93	93	48
Ash .....per cent	7.7	11.3	8.0	10.0	5.8	8.6	8.7	9.7	0.2
Fiber composition chemical wood per cent	100	100	100	100	100	100	...	...	.....
rag .....per cent	...	...	...	...	...	...	100	100	.....

[1] All tests, except curl, expansion, air and oil permeability, made by the methods of the Technical Association of the Pulp and Paper Industry.
[2] Odd-numbered papers made with minimum of beating.
[3] For test specimen 15 mm. wide and 90 mm. between jaws.
[4] For test specimen 15 mm. wide and 100 mm. between jaws.
[5] Determined with Carson permeability tester. B. S. J. Research 12, 567 (1934); RP681.
[6] Resistance of printing papers. TAPPI Assoc. Papers XI, no. 1 (1928).
[7] Determined with Carson curl tester. Paper Trade J. 79, 48 (1924).
[8] Test specimens 44 in. long.
[9] Bursting pressure in lb./in.^{2} through a circular orifice 1.2 in. in diameter.

1. Lowest machine direction coefficient of linear expansion of paper results in the most satisfactory register of successive color prints.

2. Machine direction expansion of paper is lowest when the greatest number of fibers are parallel to that direction, and the gelatinization of fibers, commonly termed hydration, is at the minimum.

3. The sheet formation with respect to fiber orientation and hydration can be controlled by proper control of the mechanical treatment of fibers in manufacture. Fiber length should be kept at the maximum and hydration at the minimum, by keeping both beating and jordanning at the minimum required for suitable strength and surface quality.

4. The desirable sheet formation is characterized by large directional difference, or grain effect, due to fiber orientation; therefore a high ratio of machine direction to cross direction folding endurance is generally indicative of good formation for close register.

The all-rag papers did not respond in the same manner as the much more widely used type, the chemical wood papers, with respect to the relation of sheet formation to machine direction linear expansion. Hence, control of the mechanical treatment of the fibers did not in itself control expansion. With the present knowledge, the only available method of predicting the register for rag papers is by determining the coefficient of expansion.

Acknowledgment

Acknowledgment is made of the invaluable assistance of the advisory committee from the Lithographic Technical Foundation under the chairmanship of Prof. R. F. Reed: the U. S. Coast and Geodetic Survey; B. W. Scribner, chief of the paper section of the National Bureau of Standards; and the following manufacturers of the papers studied: Dill & Collins, Inc.; Oxford Paper Co.; West Virginia Pulp & Paper Co.; and Kalamazoo Vegetable Parchment Co.

Literature Cited

(1) Bur. Stds. J. Res., 9:427 (1932); R.P.480.
(2) Bur. Stds. J. Res., 12:53 (1934); R.P.633.
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Reflection Measurements on Pulp and Paper*

By Richard S. Hunter[1]

Abstract

The gloss, "brightness," opacity, lightness, color and surface texture of pulp and paper are associated with the reflection of light. It is the object of this paper to explain these factors, first, as they are evaluated by visual observation and inspection and secondly, as they are evaluated by physical measurements of reflected light.

This discussion is not concerned with the measurement of color characteristics of reflected light, but with the measurement of reflection intensities.

Inasmuch as paper is used as the medium on which to produce records in printing, writing, and picture, measurements on paper which determine characteristics of visual appearance are of fundamental importance. The various reflection measurements on pulp and paper are, in most cases, used to determine values to be associated with appearance.

The factors which are used to characterize the appearance of a specimen vary with the habits and training of the person who is inspecting the specimen. The fact that paper men, as a group, have come to recognize the same factors in much the same way is evidence of their long experience with the same problems. The manner in which they identify definite factors of appearance such as finish, "brightness," and texture points to these as the specific factors which must be measured in order to describe scientifically the appearance of paper.

Throughout this presentation emphasis will be placed on the distinction between the characteristics of appearance which the reflection measurements are used to evaluate and the measurements themselves. Reflection measurements are obtained by means of instruments which make possible certain definite optical determinations. The chief value of these determinations lies in the fact that they are established on metrical bases. From any given instrument, a number which represents the reflection quality in question is obtained and this number may be interpreted by anyone familiar with the method by which it was determined. The measurement can be repeated by another investigator in another place and he should get the same answer as the first.

Nevertheless, the optical measurement and the characteristic of appearance which it represents are two different things. The optical measurement is a *physical* measurement. The characteristic of appearance is treated from a *psychological, or psycho-physical* standpoint.

This paper is a study of reflection measurements in which particular emphasis is placed on the geometrical bases of the measurements of light reflection from paper. The material presented here applies equally to visual instruments which use the human eye and to photo-cell instruments which use some type of "photo-electric eye."

Uses of Pulp and Paper Reflection Measurements

Before taking up the various measurements of reflected light, it would be well to establish the uses of these determinations and the reasons for which measurements are made. This matter of uses and applications of the various determinations is, at the present time, the subject of a study by the Color Committee of the Technical Association of the Pulp and Paper Industry. This study is most timely since, in a brief acquaintance with the pulp and paper situation, one encounters considerable confusion within the industry as to the real uses and meanings of the different reflection evaluations that are made. Below are given the uses of each of the reflection characteristics of paper that are studied.

Gloss (3) (4) (5) is measured to determine the tendency of a paper to produce glare by regular reflection. In addition, gloss determinations are always closely associated with the finish and printing quality of papers. Although these latter two factors are quite important in the determination of paper quality, optical measurements of gloss do not seem to give wholly reliable determinations of either finish or printing quality.

"Brightness"[2] *(8)* is measured to determine a type of color quality. "Brightness" has an important bearing on the value of paper from an appearance standpoint. The "brightness" of a pulp is measured to determine the "brightness" of paper which may be made from that pulp. During the process of bleaching, "brightness" is the factor that increases as the pulp bleaches. For this reason, "brightness" is often used as a measure of the "completeness of bleach" of pulp and paper stock.

Opacity (9) (10) (11) (12) (13) (14) measurements are used to determine the ability of papers to hide contrasts. A page in print should have sufficient opacity to obliterate print on the page following, or print on the reverse side of the same page. For another class of papers (tracing paper, envelope windows, etc.) there is desired as low an opacity as possible.

Lightness (6) (9) measurements and comparisons are made to determine how high on the "value" scale, or diffuse reflection scale, a specimen lies. Magnesium oxide and magnesium carbonate are at the top of this scale, other white surfaces are lower, the grays are below whites, and black is at the bottom.

Color (6) (7) (8) (9) measurements are made for purposes of color control, color duplication, or check on completeness of bleaching, etc.

Pulp color (7) (8) measurements determine color quality and also, to a certain extent, the "brightness" of paper pulps. Pulp color evaluations are used to direct the selection of pulps for paper stock. No paper can have reflection values higher than the average of the reflection values of all the materials that go into the paper stock. Dyes applied to alter the color characteristics of paper pulps lower the reflection values of the papers made with them.

Surface texture (2) (5) comparisons and studies are made in the evaluation of surface character of papers. Surface texture is associated with gloss and "finish" and also with printing quality. Measurements of surface texture, however, are difficult.

Geometric Distribution of Reflected Light (1) (2)

It is convenient in the geometric description of a reflection-measuring instrument to consider first the angular distribution of the reflected light. The reflection distribution curve is commonly used. This curve as it is drawn in Fig. 1 describes the intensity of light reflected from a specimen when that specimen is illuminated by a single

* Presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., Feb. 18 to 21, 1935.
* Publication approved by the Director of the National Bureau of Standards of the U. S. Department of Commerce.
[1] National Bureau of Standards, Washington, D. C.

[2] Throughout this paper "brightness" appears in quotes to distinguish it from the term brightness in accepted usage in photometry and illuminating engineering.

concentrated beam of light. It illustrates graphically the two fundamental types of reflection of light by materials, regular reflection and diffuse reflection.

Specular reflection, mirror reflection, and the reflection which is identified with gloss and glare are examples of regular reflection. Regular reflection always takes place at the outer bounding layer, or surface, of an object. If the surface of the object is a smooth plane of high polish, the object reflects images as a mirror. The law of mirror reflection states that the angle of incidence is equal to the angle of reflection. If the object is textured and possesses an unpolished surface, regularly reflected light is directed generally about the angle of mirror reflection. This latter case is taken as the general case for paper. The angle of regular reflection is shown in Fig. 1. The distribution of regularly reflected light about this angle is represented by the hump of the reflection distribution curve.

Diffuse reflection is the type of reflection associated with the whiteness and color of objects. It might be termed pigment reflection since reflected light of this character enters into the body of the reflecting object and suffers inter-reflections among the pigment particles before it emerges. This type of reflected light is scattered in all directions from the reflecting surface so that a matt white surface, for instance, appears about equally light in all the directions from which it may be viewed. In Fig. 1 the diffuse reflection is represented by the semi-circle drawn about the point of reflection.

Reflection-measuring instruments, if represented by the type of reflection which they measure, can therefore be of only two basic types; (1) those which measure regular reflection such as gloss meters and glarimeters, and (2) instruments which measure diffuse reflection such as colorimeters, "brightness" meters, opacimeters, and blackness meters.

The Measurement of Gloss and Surface Characteristics

The measurement of gloss is the only measurement of regular reflection which is attempted in the paper trade. However, inspections and studies of surface characteristics to determine the texture, finish and printing quality of papers are made visually by trained judges of paper quality. These evaluations are made by regularly reflected light because this light is always surface reflected light. Here is the reason why the paper man studies his samples as grazing incidence to determine the surface characteristics. Optical theory states that regular reflection, which is surface reflection, is most intense at grazing angles.

The Ingersoll Glarimeter, *(3) (4) (5)* shown in Fig. 2, is the type of instrument commonly used in the paper industry to measure gloss and is recognized by the TAPPI. This type of instrument measures gloss by means of a polarization photometer. The measurement is based on the fact that light regularly reflected from paper at 57½ degrees is plane polarized. The measurement made by the Ingersoll Glarimeter is called "percent gloss" which is the percentage of regularly reflected light in the total light reflected from the surface at 57½ degrees. On the distribution curve of Fig. 1 this corresponds to the percentage of light in the hump as compared to the light in the semi-circle and hump at 57½ degrees. In the visual appreciation of the gloss of a paper sample this corresponds to the contrast between that part of the sample which is reflecting regularly as glare and that part of the sample which is reflecting only diffusely.

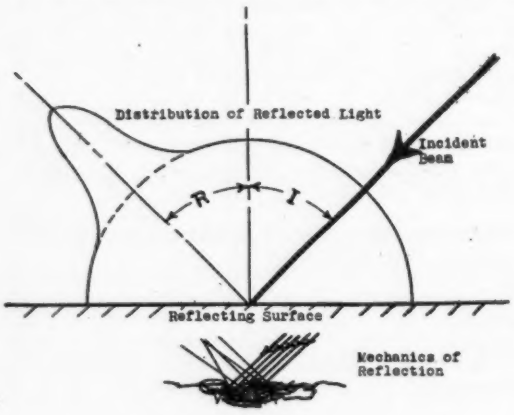

FIG. 1
Hypothetical distribution of reflected light from paper surface.

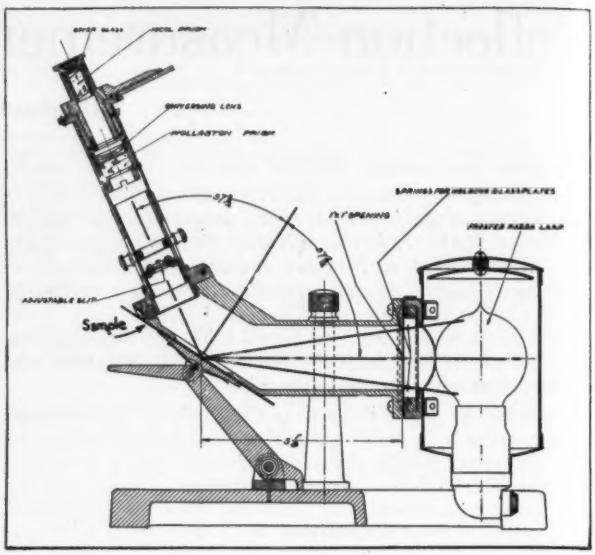

FIG. 2
Drawing of Ingersoll glarimeter.

In order to describe scientifically the instrument which makes these measurements, the following information about the Glarimeter is given. The light strikes the sample at an angle of 57½ degrees, from a source of .006 hemisphere, and the gloss measurement is made visually at the angle of regular reflection, which is, of course, 57½ degress. The size of the source is important because it determines how great a spread about the direction of regular reflection is included in the gloss measurement. From the shape of the distribution curve, one can realize that the size of the reflection area measured at the direction of regular reflection will determine what the measurement of regular reflection will be. The source used in this instrument is an incandescent lamp. Occasionally one alters the color of this source with a filter in order to measure the gloss of some colored object, but ordinarily the color of the source remains that of the incandescent lamp at about 2500 degrees K. As was stated above, the instrument is a polarization instrument which is able to measure gloss at one particular angle because light regularly reflected from any non-metallic surface at the polarizing angle (about 57½ degrees for paper) is completely polarized. A Wollaston prism forms the two beams for comparison. One beam contains diffusely and regularly reflected light, the other beam only diffusely reflected light. These two light beams are polarized, one at right angles to the other. An analyzing Nicol prism is used to balance the intensities of these two light beams and an observer makes the gloss reading by noting the position of this

Nicol prism for balance, "Per cent gloss" can be derived from the gloss reading.

Measurements of Diffuse Reflection:—"Brightness," Lightness, Opacity and Color

As has just been noted, evaluations in regular reflection describe the surface and "finish" characteristics of a specimen. In the same way, evaluations in diffuse reflection describe the various body and pigment characteristics of a specimen which are color, "brightness," lightness, whiteness, blackness, and opacity. To study color and diffuse reflection characteristics, one is careful not to allow the glare of regular reflection to affect the comparisons. In this respect the designers of instruments must take exactly the same geometrical precautions as do trained observers in their inspection of pulp and paper.

"Brightness," lightness, opacity, and color are four specific measurements of diffuse reflection. There are a number of instruments in use in the paper industry each designed to measure some particular one of these factors. Geometrically at least, the functions of these individual instruments ought to be interchangeable; so, for example, the "Brightness" tester ought to be capable of measuring opacity and any opacimeter should also be able to measure lightness as well as "brightness."

In the reflection distribution curve of Figure 1, diffuse reflection was represented by the semi-circle of reflection intensity in all directions. The radius of this semi-circle is proportional to the diffuse reflection factor for the specimen, so that a white sample, for instance, would possess a large radius relative to a gray one, and a perfect black would possess no radius at all. Pure magnesium oxide[3] is the accepted standard surface for specifying diffuse reflection factors and it is termed 100%. Other samples are measured in terms of its reflections.

In measuring diffuse reflection the "Brightness" tester *(8)* developed at the Institute of Paper Chemistry employs 45-degree illumination. Measurement of reflection intensity is made normal to the surface through a specific blue filter. A photo cell with amplifying and measuring system is the receiver. Thus "brightness," which was formerly evaluated visually by trained observers who had to consider both the color and lightness of the samples, is now tied to a definite physical measurement; i.e., the diffuse reflection coefficient through a Wratten No. 49 blue color filter, illumination at 45 degrees and measurement normal to the surface of the sample. To give a complete representation of this measurement, spectral selectivities of light source, color filter, and photo cell are also given. For color and other reflection measurements the "Brightness" tester is equipped with color filters which isolate and make measurements in other parts of the color spectrum.

[3] The preparation of magnesium-oxide standard surfaces is described in Bureau of Standards Letter Circular 395 (Dec., 1933).

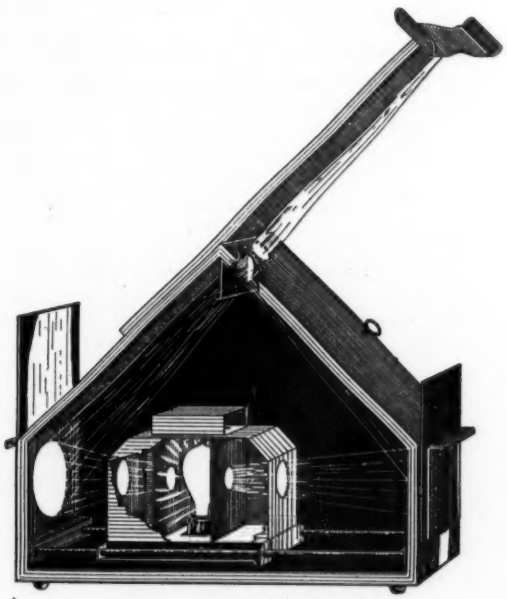

FIG. 3
Drawing of Hunter reflectometer, showing interior.

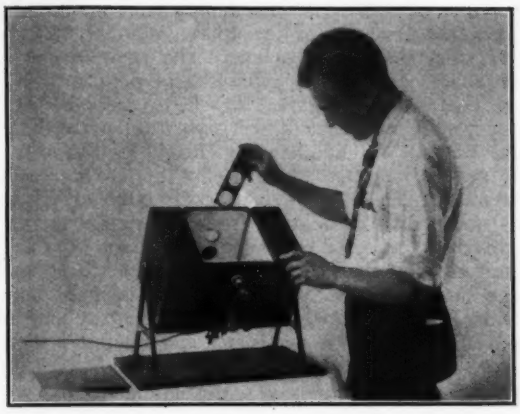

FIG. 4
Priest-Martens-Photometer opacity meter with cover removed.

A visual instrument, similar to the "Brightness" tester in geometric design, is the Hunter Reflectometer *(9)* shown in Fig. 3. Illumination in this instrument is normal to the surface and measurement is made at 45 degrees. These conditions are reciprocal to those in the "Brightness" tester. That is, the directions of illumination and measurement are interchanged, but this interchange of geometrical dimensions does not affect the equivalence of measurements on the two instruments. This fact follows from Helmholtz' reciprocal relationship *(2)* which states that reversal of the direction of a light path does not change the amount of the light received through this path. Two surfaces are compared in the Hunter instrument and a pattern mirror photometer head is used to bring them into visual contact. To make the measurement, the lamp is moved between the two surfaces until a point of balance is found where the two surfaces appear equally bright and the pattern lines in the photometer head disappear. Glass filters are used in this instrument to isolate various spectral regions in the same way that they are used in the "Brightness" Tester. With regard to "brightness" determinations with this instrument, it was found that the Wratten No. 49 blue filter was so dark that the intensity of the lamp in the instrument had to be increased 20 fold over the intensity of the lamp normally used without filters.

Figure 4 is a photograph of a visual opacity meter *(10)* which conforms to the Official Method of TAPPI for Determination of the Opacity of Paper *(11)*. In this official method the measurement of opacity is described as follows: "The essential principle of the contrast-ratio method of determining the opacity of paper which is here specified, is as follows. The apparent reflectance of translucent paper when combined with a white backing is

higher than its apparent reflections when combined with a black backing because of the greater amount of light reflected from the white backing. The ratio of the lower reflections to the higher, expressed in per cent, is taken as the opacity of the paper, this being 100 per cent for perfectly opaque paper and nearly zero for perfectly transparent paper." In another sentence, "Measurements of apparent reflectance . . . shall be by illumination which is in effect completely diffused. The direction of view shall be not more than 20 degrees from the normal to the surface of the sample, or equivalent conditions of illuminating and viewing shall be used." Thus the official method which describes the measurement specifies another method of illumination and measurement than that which is used in the "Brightness" Tester and Hunter Reflectometer.

In a more recent photo-cell standard opacity meter *(12)* the sample is illuminated by a single beam, but the light is received from the sample in a white-lined box which takes light reflected from the sample in all directions. The photo-cell, which receives the light for measurement, is, in turn, illuminated chiefly by the walls of the interior of this box. Thus the two opacity meters present nearly reciprocal designs and make geometrically almost equivalent measurements.

At present there are no widely accepted instrumental measurements of lightness or color in the paper industry. These two factors of the appearance of pulp and paper are generally appreciated in the trade and are commonly evaluated by visual inspection. Probably the most precise reflection determinations made in the paper field are those in which one sample of paper is compared visually for lightness or color with another. The edges of the samples are cut clean so that, when one is placed in contact with the other for comparison, there is no border of demarcation between them. Inspection must be made in good illumination and the samples held very carefully in the same plane so that light from the same direction illuminates both. Extremely small differences in lightness or color can be appreciated in this manner.

Unfortunately for this method of measurement, satisfactory color standards in paper have been difficult to obtain. Permanent and reliable lighting conditions are also difficult to obtain. For these reasons, specific, reproducible measurements of lightness and color by means of instruments are desirable. Lightness measurements are merely measurements of diffuse reflection factors under standard conditions; that is, standard illuminations and specified methods of measurement. Measurements of color are usually based on diffuse reflection determinations for each part of the color spectrum. The measurement of color is a most complex subject in itself and the present paper will not go into this matter further.

From a geometric standpoint, there are two generally accepted types of instruments for making the various diffuse reflection determinations just described. There are also a number of particular types of instruments which possess individual methods of illumination and measurement. The two accepted types are those which were noted above; the "45°-normal" type such as the "Brightness" tester and Hunter Reflectometer and the "diffuse-normal" type such as the two opacity meters. Most of the diffuse illumination instruments use a white-lined sphere or hemisphere for illumination.

To refer back to Fig. 1 and what has been said about the way diffusely reflected light is distributed by surfaces, one may ask why it is necessary to differentiate between these different methods of measuring diffuse reflection. If light were always diffusely reflected in the manner represented by Fig. 1, it would not be necessary to consider this matter. Such things as texture, formation, and pigment and fiber shapes, however, affect the distribution of reflected light from papers and pulps. The perfect semi-circular curve of diffuse distribution is only a hypothetical approximation to the true conditions *(2)*. Users of "Brightness" testers can testify to the different reflection values obtained on the same sheet of paper when the paper is turned and measurements are made in different directions and on opposite sides. On measurements with the Hunter Reflectometer, these variations have often amounted to 3 and 4 per cent.

As far as the user of paper is concerned, he is not likely ever to encounter one of the standard modes of illumination and viewing in the use of his paper. He would not be aware of the special significance of such a set of conditions if he did accidentally encounter it. Thus the user of paper has no concern for the special method of measurement which is used to class his paper; he is interested only in the comparison of samples under identical conditions.

In the matter of the comparative appearances of two or more similar samples, however, this greater precision of measurement is justified. It is when comparisons are made, one sample with another, that very small differences can be identified visually. For this reason small measured differences between similar samples represent actual differences in appearance.

Permanent working standards, accurately calibrated, play an important part in most of the reflection measurements mentioned above. Magnesium oxide, deposited as smoke from burning metallic magnesium, and magnesium carbonate block have been the reflection surfaces commonly called 100 per cent. It is known that these standards are not always accurately reproduced from one time to another. Magnesium carbonate block has been known to go to as low as 93 or 94 per cent of its accepted reflection value. Because it is more faithfully reproduced, magnesium oxide is the preferred standard. Reflection standards of porcelain enamel, white opal glass and other ceramic materials are used to give fairly permanent surfaces of known reflection. These standards can be washed from time to time, and have been found to change little if any in reflection coefficients. Translucent white glass is used to make practical standards for checking and calibrating opacity meters *(14)*. Secondary standards of these types are convenient because they are durable and can be used to check the scale readings of instruments in the same reflection ranges in which the values of papers, paints and other materials are found.

Literature Cited

Much of the material of this present paper was also treated in other papers of this same color program of the 20th annual meeting of TAPPI. Particular reference is made to the paper by Davis and Lewis entitled "Definition and Instrumentation Regarding Brightness."

Papers dealing with reflection measurements are listed below according to their subject matter.

GEOMETRIC DISTRIBUTION OF REFLECTED LIGHT

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(2) H. J. McNicholas, "Absolute Methods in Reflectometry," Bureau of Standards Jour. Research, *1*, 29 (RP3, 1928).

GLOSS

(3) R. L. Ingersoll, "The Glarimeter—An Instrument for Measuring the Gloss of Paper," J. Optical Soc. Am. *5*, 213 (1921).

(4) R. E. Lofton, "The Glarimeter and the Measurement of the Finish of Paper," Paper Trade Jour. *80*, 47 (Feb. 12, 1925).

(5) R. S. Hunter, "A Glossmeter and Surface Texture Comparator." Paper Trade Jour. *99*, 38 (Aug. 16, 1934).

COLOR, LIGHTNESS, "BRIGHTNESS"

(6) R. E. Lofton, "A Measure of the Color Characteristics of White Papers," Bureau of Standards Tech. Paper No. 244 (1923).

(7) W. B. Van Arsdel, "Color Specifications in the Pulp and Paper Industry," J. Optical Soc. Am. *21*, 347 (1931).

(8) L. C. Lewis, "The Place of Pulp Color Measurement in Paper Making—Present and Future," Paper Trade Jour. 97, 35 (Dec. 7, 1933)). Also "Standard Brightness Tester," Paper Mill and Wood Pulp News *57*, 20 (June 23, 1934).

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OPACITY

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(11) "Official Method of TAPPI for Determination of Opacity of Paper, No. T425m."

(12) M. N. Davis, "Methods and Instruments for Opacity Measurement," Tech. Assoc. Papers, Series 15, 347 (1932). Also "A Simple and Reliable Photo-Electric Opacity Tester," Tech. Assoc. Papers, Series 16, 277 (1933).

(13) D. B. Judd, "Sources of Error in Measuring Opacity of Paper by the Contrast-Ratio Method," Bureau of Standards Jour. Research *12*, 345 (RP660, 1934).

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The Modified Oxford Glossmeter*

By Otto Kress[1] and Howard W. Morgan[2]

The importance of the property of paper known as gloss or glare is well known. It is especially important in book papers where this property has an important effect on the printing result and is also a major factor in the appearance of the printed sheet. With coated book papers the Grading Committee of the Book Paper Manufacturers Association has felt that it is one of the properties that should be considered in grading. Recognizing the limitations of the polarization type of glarimeter, they inaugurated a study of other suggested methods of measuring gloss. They arrived at the conclusion that an instrument designed by L. A. Carpenter of the Oxford Paper Company warranted more careful study. Accordingly, an experimental model of this instrument was built at the Institute of Paper Chemistry. The gloss of samples submitted by the grading committee was measured with this instrument and correlations between the measurements and visual ratings of gloss established. The effect of such factors as color and coating composition was investigated. Several modifications of Mr. Carpenter's original design were tried and an instrument embodying some of these modifications was finally found to give the best measurement of gloss.

* Presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., Feb. 18 to 21, 1935.

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[2] Member TAPPI, Research Associate, Institute of Paper Chemistry.

Review of Principle of the Polarization Glarimeter

It might be well first to briefly review the principle of the polarization glarimeter. Light falls on the sample at an angle of 57 ½ degrees with the normal to the surface. Part of this light is diffusely reflected and part specularly reflected. The specularly reflected light has been shown to be almost completely polarized. The instrument is designed so that the setting of a rotating Nicol prism gives a measure of the percentage of polarization in the reflected light and by definition a measure of gloss. The most serious deficiencies in this type of instrument are: (1) effect of color and brightness upon gloss value, (2) effect of various coatings, (3) small separation on high gloss papers, and (4) effect of personal element and eye fatigue.

To overcome these deficiencies the Oxford glossmeter has been developed. The basic principle and design are simple. Light is projected on the sample at a low angle (15 degrees with the surface) and specularly reflected to

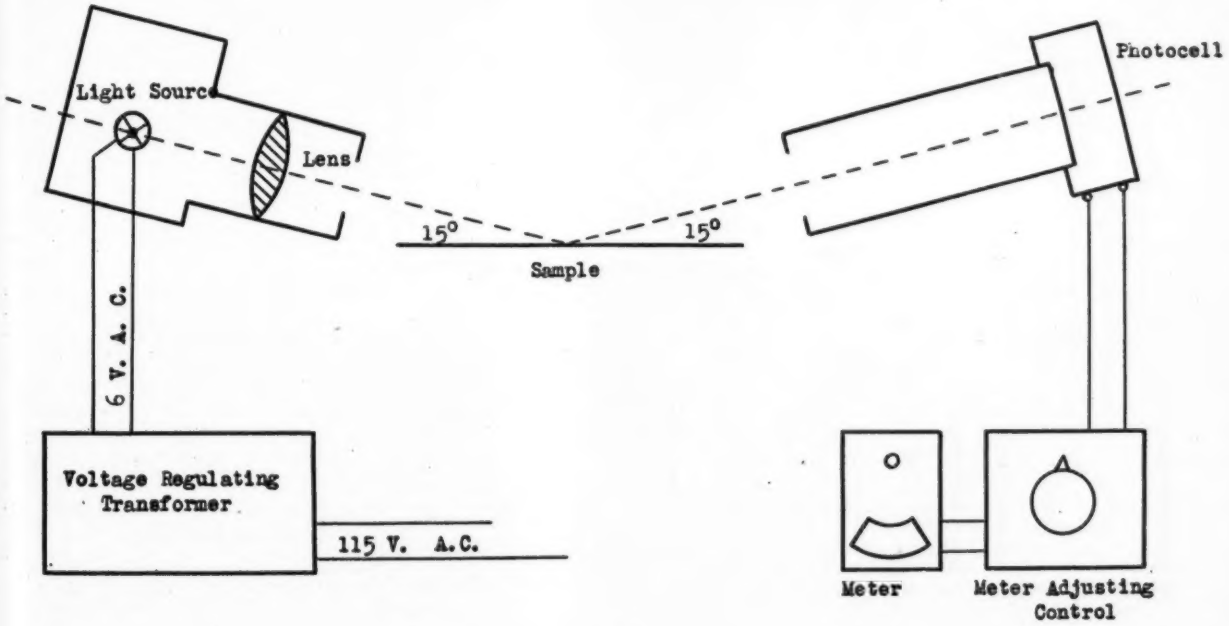

FIG. 1
Oxford Glossmeter.

a photo-electric cell. The per cent gloss is taken as the ratio of the light reflected from the sample to that reflected from a standard highly polished black surface; i. e., with a suitable meter connected to the cell and adjusted to read 100 per cent with the standard surface as a reflector, the meter will give directly the per cent gloss reading of a sample placed in the holder. A simple sketch is shown in Fig. 1. The theory of this gloss value may be explained briefly. It is found by experiment or by simple calculation that the polished black glass used as a standard will reflect about 26 per cent of the light incident at 75 degrees (15 degrees with the surface). A paper which reflects (specularly) 16 per cent of the incident will have a gloss value of 16/26 or about 60 per cent. Actually, in operation, the 26 per cent value is increased to 100 per cent and the 16 per cent automatically becomes 60 per cent read directly from the meter scale.

Effect of Color

This new glossmeter shows distinct advantages over the polarization type glarimeter. The gloss readings are affected very little by color and brightness. It is true that the photo-electric cell is not "color blind" but there is little color effect in the specularly reflected beam. Operating at a low angle the specular reflection is very large in comparison with the diffuse reflection. This effect can be easily demonstrated by holding a glossy colored sheet such that light strikes it at a low angle, near grazing incidence, and viewing the sheet at the same angle. It is extremely difficult to tell the color of the sheet. The ratio of specular to diffuse reflection is over three times as great at 75 degrees with the normal as at 57½ degrees as used in the polarization glarimeter. This ratio of specular to diffuse light is made still greater in the Oxford glossmeter than these figures indicate, by concentrating the specular beam and excluding diffuse light to the point where its value is practically negligible.

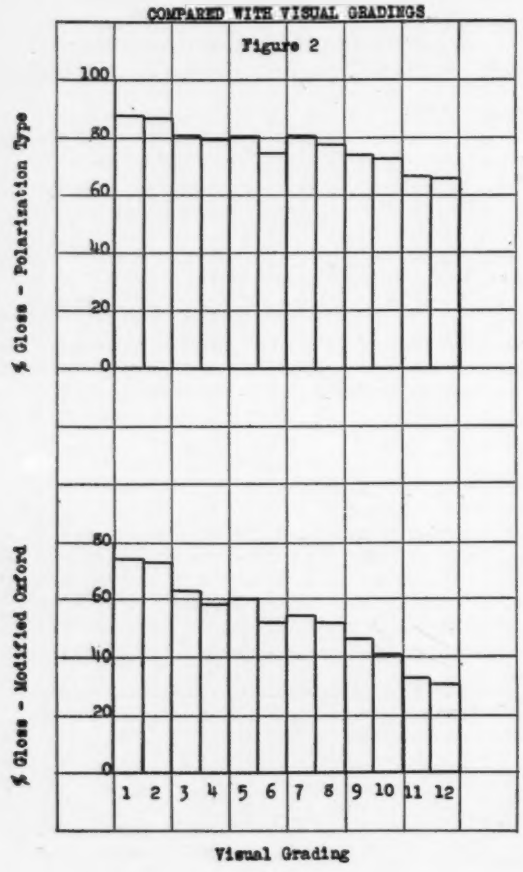

FIG. 2

Gloss measured on Oxford and polarization type glossmeters.

Absence of Appreciable Color and Brightness Effect

The absence of appreciable color and brightness effect has been demonstrated by the use of various samples prepared with different colors and brightness values with as nearly as possible the same gloss. The glossmeter showed practically the same reading on such samples. In other cases the reading correlated exceptionally well with the visual ratings placed on the papers. To take an extreme case illustrating brightness effect, consider a very low gloss black coated sheet. Such a sheet may read 90 to 95 per cent gloss on the polarization type meter and about 8 per cent on the Oxford glossmeter. The inability to read gloss of colored papers on the polarization meter is obvious since it becomes necessary to compare two fields of different color saturation.

Effect of Various Coatings on Readings

The effect of various coatings on readings in the polarization type glarimeter is in some cases very marked. This is evidently due to the property of some coating materials to affect the polarization angle. The most notable example found is a comparison between sheets coated with titanium dioxide, English clay, and calcium carbonate. The three sheets showed approximately the same glare on the polarization meter and gave gloss readings of 29, 35, and 44 per cent respectively on the Oxford glossmeter. Visually there is a decided difference between these samples when viewed at angles ordinarily used for visual grading. At high angles with the surface the apparent difference in glare is small.

Another Very Important Factor

Another very important factor is that of separation or differentiation between high gloss papers where the visual difference in gloss is small, yet extremely important for accurate control and specification. The chart (Fig. 2) shows comparative gloss readings on twelve coated book samples arranged in order of their visual gloss as rated by a sub-committee of the grading committee. The papers were measured on the Oxford and polarization type meters. The Oxford shows a separation of 43 per cent on these twelve samples, while the polarization type glarimeter shows a separation of 22 per cent, leaving the greater part of the total gloss scale to cover very low gloss papers. This separation on high gloss papers can also be attributed to the low angle used. The relatively high value of specular reflection at 15 degrees makes possible a differentiation which would be impossible at high angles with the surface

Still another marked deficiency of the polarization type meter is the subjective nature of the measurements. In operation it is necessary to watch adjacent fields, introducing a personal element in readings, especially as the eye becomes fatigued. The new glossmeter is entirely objective in operation, being a photo-electric instrument using an electric meter for gloss readings.

After it had been determined that this instrument met the requirements of the grading committee for measuring gloss, the instrument was turned over to an instrument manufacturer who is now building commercial instruments which will shortly be available for purchase.

Johns-Manville Joins TAPPI

Johns-Manville has become a company member of the Technical Association of the Pulp and Paper Industry.

Johns-Manville, itself a manufacturer of paper made from asbestos, has played an important part in the paper industry as a whole for many years. With the mineral asbestos as a foundation, this company has pioneered the development of products designed to eliminate industrial waste, reduce maintenance expense and provide permanent, fireproof building materials for the protection of costly plant investments.

Insulation One of the Earliest J-M Products

The science of industrial insulation, for example, may truly be said to have had its inception in that modest factory, built in 1858, which was destined to be the forerunner to the present Johns-Manville organization.

There some of the earliest insulations were made, crude products in cement form which were sold, with considerable difficulty, to the more progressive industrial plants of the day for covering boilers and steam pipes. That was twenty years before Edison built the first electric light plant, and long before industry became generally concerned with fuel conservation or with the efficient utilization of heat.

From that modest beginning the science of insulation has developed until now it is conservatively estimated that J-M insulation materials save American Industry over $250,000,000 annually. Today, an uninsulated boiler drum or steam pipe is almost unheard of. And wherever heat or refrigeration is used in industry, insulation is generally recognized as an essential to economical operation.

The insulating materials in use today bear little resemblance to those of three-quarters of a century ago. As industrial processes changed, as temperatures were increased and service conditions made more severe, insulating materials have kept pace with industry's requirements either through the improvement of old products or through the development of new ones.

In the J-M Thermal Insulation Laboratory, the largest and best equipped in the world, every possible type of insulating material is thoroughly tested, not only as to thermal conductivity, but also with respect to every chemical and physical property. Below-zero cold rooms and high temperature furnaces are used to elminate any chance of guess-work in the final conclusions as to how the material may perform in actual service.

From the four basic mineral products—asbestos, magnesium carbonate, diatomaceous silica (Celite), and rock wool made from argillaceous limestone—Johns-Manville furnishes insulation in the forms of sectional pipe covering, insulating sheets, blocks, bricks and blankets; insulating cements, fillers and finishes; insulating papers and felts; as well as a light-weight aggregate used with portland cement for making insulating concrete. A wide range of hair felt products completes the line.

Roofing of Asbestos

Roofing felt made of asbestos was also one of the early products of the old factory. Because it would not burn, even when impregnated with asphalt, asbestos felts found a ready acceptance both in roll form for pitched roofs and built-up for flat decks. The smooth-surfaced asbestos built-up roof, as it stands today, is the outcome of more than a half century of research and development in the design of fireproof, permanent roofs.

At a somewhat later date, asbestos fiber was combined with portland cement to produce a strong, rigid sheet known as Transite. Many millions of square feet of this material in corrugated form are now used as fireproof, corrosion-resistant roofing and siding on industrial buildings over skeleton frame construction.

A Special Rot-proof Roof for Paper Mills

Of special significance to the paper industry, is the fact that Corrugated Transite made possible an insulated, completely rot-proof roof for paper machine rooms. A deck of Corrugated Transite is first laid over the purlins, followed with a cork mastic leveling fill, the required thickness of sheet cork and a smooth-surfaced asbestos built-up roof.

Many paper mills now use this roof over machine rooms to minimize roof drip and periodic shut-downs for repairs and to insure permanent, waterproof protection.

Transite Paper Machine Hoods

On the paper machine itself, we find Transite in another form. Here, as flat sheets for machine hoods, it is highly effective in increasing drying capacity, in decreasing the amount of air required for the drying operation, and in lowering the humidity of the paper machine room.

These Transite hoods are fireproof, highly acid-resistant, unaffected by heat or water, and require no maintenance. Some mills insulate the outside of the hoods to provide still greater drying efficiency.

Transite Pipe for Water and Process Lines

Transite Pipe, one of the more recent developments in the asbestos-and-cement line, was designed originally for municipal water supply systems. Paper mill engineers, however, have been quick to recognize its many advantages for water and process lines. It is highly resistant to corrosion and its smooth interior wall assures high delivery capacity and low pumping costs. Transite Pipe eliminates introduction of discoloration and contaminating particles in the material being handled. It is made in a full range of sizes and pressure classes for heads up to 500 feet.

Eel-Slip—A New Bearing Material

Eel-Slip material was first formally introduced to the paper industry late in 1934 after a number of years of research and development in the J-M laboratories. Made of asbestos, graphite and rubber, this new product for paper mill application is as slippery as its name implies. Water is its best lubricant, and when running wet the coefficient of friction is unusually low, approximately .015.

Many paper mills are already using Eel-Slip for increased efficiency and economy on the wet end of Fourdrinier and cylinder machines—for shaker or flat screen blocks, water tables or forming boards, suction box covers, steam joints, suction couch and press roll packing, deflector strips and doctor blades.

Friction Materials

For many years Johns-Manville has been furnishing asbestos brake blocks and brake linings for paper mill clutches and tension brakes on paper calenders, rewinds and other general applications. Due to better controlled friction and higher heat resistance over wood blocks and leather, increased economy and production have resulted. Fire hazard and objectionable smoke from wood blocks have been eliminated.

Packings and High Temperature Cements

Johns-Manville has a complete line of packings and

gasketing materials to meet the most severe conditions in the paper industry. Through constant study and research J-M packings have reached a high degree of efficiency and economy of operation.

There is a J-M refractory cement to meet all conditions in the manufacture of paper. A cement for troweled or dipped joints, a wash-coating material or a cement for casting monolithic refractory shapes on the job.

Other J-M Products

Among the other J-M materials for the pulp and paper industry are J-M industrial flooring, either hot mastic or asphalt plank, and J-M asbestos and asphalt shingles for roofing and siding on offices, mill village homes, etc.

The Johns-Manville Organization

There are eleven Johns-Manville factories in the United States, Canada and Europe. For the entire organization centralized research activities are carried on at the Manville, N. J. plant, where Johns-Manville maintains the largest laboratory in the world devoted to development of materials for the control of heat, cold, sound and motion and for protection against the destructiveness of fire and weather. In addition to the thermal insulation laboratory previously mentioned, there are most complete facilities for research in acoustics and sound control, brake linings, packings, refractories, roofing, flooring, and the other broad groups of products manufactured by Johns-Manville.

Contact with industry is maintained through a General Industrial Department with a staff of industrial engineers who supervise the activities of 18 district offices in the United States and Canada. The General Department Staff also coordinates research activities with the District sales organizations for study on commodity development and industrial field problems. A Technical Department correlates all data on J-M commodities and their application in industry and compiles technical data sheets to make all such information generally available.

In each District there are also engineers and salesmen who cover a geographical territory or, in some cases, a list of special accounts.

In the TAPPI Johns-Manville will be represented by J. W. Hemphill of the General Industrial Department who has been closely associated, for a number of years, in the use of the company's products in the pulp and paper industry.

Delaware Valley TAPPI Dinner-Dance

The Delaware Valley Section of the Technical Association of the Pulp and Paper Industry closed its season of meetings with a delightful dinner-dance at the Bellevue-Stratford Hotel in Philadelphia. About thirty-five couples were present. The details of the program were ably handled by a special committee under the chairmanship of Jacob Edge of the Downingtown Manufacturing Company.

Those present included Mr. and Mrs. A. E. Waugh; Mr. and Mrs. O. C. Cordes; Mr. and Mrs. Emerson Glauner; Mr. and Mrs. John Kagerhuber; Mr. and Mrs. Rinehart; Mr. and Mrs. Edwin Cowles; Mr. and Mrs. Jacob Edge and daughters; Mr. and Mrs. S. M. Hesser; Mr. and Mrs. McCarthy; Mr. and Mrs. W. D. Wendt; Mr. and Mrs. J. Carl Schmidt; Mr. and Mrs. Swett; Mr. and Mrs. Justice; Mr. and Mrs. W. T. Marble; Mr. and Mrs. Quinn; Mr. and Mrs. S. D. Reynolds; Mr. and Mrs. William Hall; Mr. Ray Heil; Mr. and Mrs. J. H. Fritz; Mr. and Mrs. J. F. Good; Mr. and Mrs. F. E. Macef; Mr. and Mrs. G. A. Scott; Mr. and Mrs. Devlin; Mr. and Mrs. H. P. Cannon; Mr. and Mrs. Von Hamzburg, Mr. and Mrs. J. C. Dieffenderfer; Mr. Hornshock and Miss Krumnacker; R. G. Macdonald; Mr. Heil; Mr. and Mrs. V. Jacobsen; Mr. and Mrs. Van Patton; Mr. and Mrs. C. M. Connor; Mr. and Mrs. Barber; Mr. and Mrs. Fred Macy.

Newsprint in China

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., June 26, 1935—Chinese mills have not been successful in the manufacture of newsprint up to the present time, and the contemplated project at Wenchow would be devoted to this end. Foreign competition with its attendant low prices has discouraged any domestic development along this line. Such newsprint as is produced in China does not possess the requisite tensile strength for successful presswork, and consequently all newsprint used on modern presses has to be imported, occupying about 25 per cent of China's total paper imports. During 1934 imports of common printing paper, including newsprint, amounted to approximately 76,500 long tons. Should the project at Wenchow materialize, 35 short tons of newsprint per day would be added to China's paper output. At 330 working days per year this would add 11,500 short tons to the annual production.

Study Use Of Couch Grass

Possible utilization of couch, or dog, grass in the manufacture of paper is reported to be receiving the attention of some European manufacturers, according to the Forest Products Division, Department of Commerce.

This grass, known botanically as triticum repens, has roots which grow to a length of several inches with a thickness approximately one-fourth of an inch.

When ground into pulp and bleached it is stated that the roots furnish an excellent material for the manufacture of either paper or board. The pulp is distinguished by long, strong fibers, a characteristic of importance in the manufacture of wrapping papers, it was stated.

Because of the irregular supply of the grass, it is not believed that the use for paper making can be extended beyond a few special types which are manufactured in limited quantities, according to the Commerce Department.

Finch, Pruyn & Co. Cut Wood at Newcomb

[FROM OUR REGULAR CORRESPONDENT]

GLENS FALLS, N. Y., June 24, 1935—About 75 lumberjacks are participating in the pulpwood drive of Finch, Pruyn & Co. which is starting from the extensive timber tract maintained at Newcomb in the Adirondacks. The drive is progressing rapidly and the timber is nearing the mills here. The cut is among the largest made in several years and includes several thousand cords. The preserve has been maintained for several years and the pulpwood shipped here is always regarded as good quality. While other concerns in this section have shown a preference for imported pulpwood in recent years the local company has maintained that the Adirondack quality is sufficient to meet all its needs.

Holyoke Paper Mills Active

HOLYOKE, Mass., June 24, 1935—The mills of the Crocker-McElwain Company and the Chemical Paper Manufacturing Company will show a gain of approximately 30 per cent in sales for the first half of 1935, over the first half of 1934, owing to the improved demand for higher grades of paper.

IMPORTS OF PAPER AND PAPER STOCK

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

NEW YORK IMPORTS

WEEK ENDING JUNE 22, 1935

CIGARETTE PAPER

Standard Products Corp., Lafayette, Havre, 23 cs.; Standard Products Corp., Normandie, Havre, 7 cs.; H. H. Strauss, Normandie, Havre, 7 cs.; Champagne Paper Corp., Normandie, Havre, 57 cs.; Champagne Paper Corp., Pr. Harding, Havre, 240 cs.

WALL PAPER

W. H. S. Lloyd & Co., American Merchant, London, 2 bls., 1 cs.

WALL BOARD

Treetex Corp., Argosy, Horneborg, 1889 bdls.; ———, Malmen, Sundsvall, 77 bdls., 4 cs.

NEWSPRINT

N. Y. Evening Journal, Markland, Liverpool, N. S., 301 rolls; N. Y. Tribune, Markland, Liverpool, N. S., 1543 rolls; World Telegram, Markland, Liverpool, N. S., 564 rolls; Brooklyn Daily Eagle, Markland, Liverpool, N. S., 130 rolls; Gilman Paper Co., Markland, Liverpool, N. S., 144 rolls; Gilman Paper Co., Marthara, Port Alfred, 693 rolls; ———, Marthara, Port Alfred, 498 rolls; Jay Madden Corp., Scanmail, Kotka, 762 rolls; Lunham & Reeve, Inc., Scanmail, Kotka, 220 rolls; Jay Madden Corp., Argosy, Helsingfors, 380 rolls; Perkins Goodwin & Co., A. Ballin, Hamburg, 92 rolls.

PRINTING PAPER

C. W. Speidel & Co., Ingria, Marseilles, 8 cs.; G. J. Fijux, Scanmail, Kotka, 150 rolls; Jay Madden Corp., Scanmail, Wiborg, 31 bls., 63 rolls; French & European Publications, Normandie, Havre, 24 pkgs.

WRAPPING PAPER

Steiner Paper Corp., A. Ballin, Hamburg, 7 cs.

BRISTOL BOARDS

Favor Ruhl & Co., American Merchant, London, 3 cs.; Devoe & Raynolds Co., American Merchant, London, 1 cs.

DRAWING PAPER

H. Reeve Angel & Co., Inc., American Merchant, London, 8 cs.

FILTER COMPOUND

P. Heinemann, A. Ballin, Hamburg, 20 cs, 6 bls.

FILTER PAPER

H. Reeve Angel & Co., Inc., American Merchant, London, 8 cs.; ———, American Merchant, London, 1 cs.; C. Schleicher & Schull Co., Inc., A. Ballin, Hamburg, 14 cs.

SURFACE COATED PAPER

Gevaert Co. of America, Pennland, Antwerp, 13 cs.; P. Puttman, Pennland, Antwerp, 25 cs.; Hensel Bruckman & Lorbacher, A. Ballin, Hamburg, 5 cs.

BASIC PAPER

P. Puttman, Pennland, Antwerp, 2 cs.; Dingelstedt & Co., Pr. Harding, Hamburg, 45 crates, 24 cs.

COATED PAPER

Chas. Happel, A. Ballin, Hamburg, 20 cs.

PHOTO PAPER

———, Berengaria, Southampton, 1 cs.; Heemsoth Pinkus & Kerner, A. Ballin, Hamburg, 2 cs.

TISSUE PAPER

F. C. Strype, Laconia, Liverpool, 8 cs.; ———, Roma, Genoa, 3 cs.

DECALCOMANIA PAPER

B. F. Drakenfeld & Co., Laconia, Liverpool, 1 cs. (simplex).

DECALCOMANIAS

Sellers Transportation Co., A. Ballin, Hamburg, 25 cs.

BOWL PAPER

Hurley Johnson Corp., Laconia, Liverpool, 3 bls.

STENCIL PAPER

Frankel Carbon & Ribbon Manfg. Co., American Merchant, London, 1 cs.

PAPER BAGS

———, Argosy, Copenhagen, 3 bls.

PASTE BOARD

———, A. Ballin, Hamburg, 65 bls.; Flexideal Dry Mat Co., A. Ballin, Hamburg, 51 cs.

PAPER TUBES

———, A. Ballin, Hamburg, 8 cs.

MISCELLANEOUS PAPER

Chas. Happel, Black Osprey, Rotterdam, 5 cs.; U. S. Envelope Co., Pr. Cleveland, Yokohama, 12 cs.; ———, Berengaria, Southampton, 5 cs.; ———, Uyo Maru, Kobe, 3 cs.; Coty Processing Co., Normandie, Havre, 5 cs.; Marshall Field & Co., Normandie, Havre, 3 cs.; Iwai & Co., Kurama Maru, Kobe, 1 cs.

RAGS, BAGGING, ETC.

Banca Coml. Italiane Trust Co., Pennland, Antwerp, 173 bls. flax waste; Royal Manfg. Co., American Shipper, Manchester, 150 bls. cotton waste; Leigh Textile Co., American Shipper, Manchester, 60 bls. cotton waste; M. Snedeker Corp., American Shipper, Belfast, 347 bls. paper stock; ———, Ingria, Barcelona, 30 bls. cotton waste; S. Birkenstein & Sons, Ingria, Barcelona, 137 bls. rags; Bank of N. Y. Trust Co., Ingria, Barcelona, 83 bls. rags; Bank of N. Y. Trust Co., Ingria, Barcelona, 8 bls. bagging; ———, Ingria, Barcelona, 32 bls. bagging; ———, Taybank, Port Said, 110 bls. rags; ———, Pr. Harrison, Bombay, 99 bls. cotton waste; Royal Manfg. Co., Pr. Harrison, Bombay, 229 bls. cotton waste; E. J. Keller Co., Inc., Pr. Harrison, ———, 233 bls. rags; Banco Coml. Italiane Trust Co., American Merchant, London, 29 bls. rags; G. M. Graves Co., Inc., Transylvania, Glasgow, 58 bls. bagging; ———, Augvald, Barcelona, 70 bls. picker waste; H. Schimmel, Uyo Maru, Kobe, 310 bls. cotton waste; J. J. Ryan & Son., Inc., Uyo Maru, Kobe, 75 bls. cotton waste; 1st Natl. Bank of Philadelphia, Uyo Maru, Kobe, 250 bls. cotton waste; O'Brien Padawer Co., Uyo Maru, Kobe, 100 bls. cotton waste; Royal Manfg. Co., Uyo Maru, Kobe, 50 bls. cotton waste; E. J. Keller Co., Inc., Black Condor, ———, 224 bls. rags; E. J. Keller Co., Inc., Breedyk, ———, 499 bls. rags; E. J. Keller Co.,

Inc., Breedyk, ———, 56 bls. bagging; Leigh Textile Co., Breedyk, Rotterdam, 38 bls. cotton waste; Atlas Waste Manfg. Co., M. C. Holm, London, 67 bls. rags; E. J. Keller Co., Inc., M. C. Holm, ———, 8 bls. rags; E. J. Keller Co., Inc., M. C. Holm, ———, 84 bls. bagging; J. J. Ryan & Sons, Inc., M. C. Holm, Antwerp, 213 bls. cotton waste; Banca Coml. Italiane Trust Co., M. C. Holm, Rotterdam, 25 bls. bagging; ———, M. C. Holm, Rotterdam, 100 bls. cotton waste; Jaffe Products Co., Yucatan, Havana, 98 bls. rags; E. J. Keller Co., Inc., Pipestone County, ———, 112 bls. paper stock; E. J. Keller Co., Inc., New York, ———, 59 bls. paper stock; E. J. Keller Co., Inc., Black Tern, ———, 50 bls. paper stock; E. J. Keller Co., Inc., Black Tern, ———, 97 bls. bagging.

BONE GLUE

———, A. Ballin, Hamburg, 65 bags.

OLD ROPE

W. Steck & Co., Black Condor, Rotterdam, 84 coils; Banco Coml. Italiane Trust Co., M. C. Holm, London, 69 coils; W. Steck & Co., M. C. Holm, Rotterdam, 41 coils.

LACTIC ACID

Philipp Bros., Inc., Black Condor, Rotterdam, 20 carboys.

CASEIN

———, Western World, B. Ayres, 34 bags; ———, Normandie, Havre, 13 bags; ———, A. Ballin, Hamburg, 60 bags.

CHINA CLAY

English China Clays Sales Corp., Laconia, Liverpool, 140 bags.

WOOD PULP

E. J. Keller Co., Inc., Scanmail, ———, 334 bls. wood pulp, 50 tons; Lagerloef Trading Co., Scanmail, Kotka, 281 bls. sulphite, 47 tons; Lagerloef Trading Co., Scanmail, Wiborg, 357 bls. sulphite, 68 tons; Lagerloef Trading Co., Scanmail, Wiborg, 523 bls. sulphate, 104 tons; Castle & Overton, Inc., Scanmail, Wiborg, 523 bls. wood pulp, 104 tons; M. Sone, Scanmail, Helsingfors, 300 bls. dry pulp, 50 tons; Lagerloef Trading Co., Argosy, Waskloe, 635 bls. sulphite, 106 tons; Perkins, Goodwin & Co., Argosy, Horneborg, 153 bls. chemical pulp, 25 tons; Perkins Goodwin & Co., Argosy, Sundsvall, 450 bls. sulphate, 75 tons; Perkins Goodwin & Co., Argosy, Sundsvall, 600 bls. sulphite, 100 tons; ———, Argosy, Iggesund, 1000 bls. chemical pulp; ———, Pr. Harding, Hamburg, 200 bls. wood pulp, 20 tons; M. Sone, Pr. Harding, Hamburg, 654 bls. wood pulp, 101 tons; Bulkley Dunton & Co., Malmen, ———, 4200 bls. wood pulp; J. Andersen & Co., Malmen, Hernosand, 4500 bls. sulphate; J. Andersen & Co., Malmen, Hernosand, 750 bls. sulphite; Bank of Manhattan Trust Co., Malmen, Hernosand, 1500 bls. sulphite; Johaneson Wales & Sparre, Inc., Malmen, Sundsvall, 1120 bls. sulphite; Johaneson Wales & Sparre, Inc., Malmen, Sundsvall, 300 bls. sulphate; Castle & Overton, Inc., A. Ballin, Hamburg, 840 bls. wood pulp, 168 tons.

WOOD PULP BOARDS

Lagerloef Trading Co., Scanmail, Kotka, 13 bls, 5 tons; Lagerloef Trading Co., Scanmail, Wiborg, 34 bls., 11 rolls, 10 tons.

NEWARK IMPORTS

WEEK ENDING JUNE 22, 1935

H. G. Craig Co., Donpaco, St. John, 310 rolls newsprint.

ALBANY IMPORTS

WEEK ENDING JUNE 22, 1935

International Paper Co., Everalda, Newcastle, N. B., 2500 cords pulpwood; International Paper Co., Bradesk, Newcastle, N. B., 2400 cords pulpwood.

PORTLAND IMPORTS

WEEK ENDING JUNE 22, 1935

Johaneson Wales & Sparre, Inc., Malmen, Hernosand, 180 bls. sulphite; J. Andersen & Co., Malmen, Hernosand, 1500 bls. sulphate; J. Andersen & Co., Malmen, Sundsvall, 3000 bls. sulphate; Johaneson Wales & Sparre, Inc., Malmen, Sundsvall, 180 bls. sulphate.

BOSTON IMPORTS

WEEK ENDING JUNE 22, 1935

———, Laconia, Liverpool, 27 bls. rags; F. S. Webster Co., Laconia, Liverpool, 12 cs. tissue paper; G. F. Malcolm, Inc., Laconia, Liverpool, 18 cs. tissue paper; Stone & Downer Co., Laconia, Liverpool, 31 cs. printing paper; J. Cohen Sons Co., Breedyk, Rotterdam, 11 bls. rags; E. Butterworth & Co., Inc., Breedyk, Rotterdam, 817 bls. hide cuttings; Castle & Overton, Inc., Breedyk, Rotterdam, 813 bls. wood pulp; Bulkley Dunton & Co., Malmen, ———, 6325 bls. wood pulp; Johaneson Wales & Sparre, Inc., Malmen, Hernosand, 3180 bls. sulphate; Mead Sales Co., Malmen, Hernosand, 600 bls. sulphate; Mead Sales Co., Malmen, Sundsvall, 151 bls. sulphite; Johaneson Wales & Sparre, Inc., Malmen, Sundsvall, 725 bls. sulphite; Johaneson Wales & Sparre, Inc., Malmen, Sundsvall, 500 bls. chemical pulp; Johaneson Wales & Sparre, Inc., Malmen, Sundsvall, 150 bls. knotter pulp; Perkins Goodwin & Co., Malmen, Sundsvall, 125 bls. sulphite; Gottesman & Co., Inc., Goslar, Czecho-Slovakia, 645 bls. wood pulp; E. J. Keller Co., Inc., Goslar, ———, 68 bls. bagging; E. J. Keller Co., Inc., Argosy, ———, 336 bls. wood pulp.

PHILADELPHIA IMPORTS

WEEK ENDING JUNE 22, 1935

Gilman Paper Co., Markland, Liverpool, N. S., 1882 rolls newsprint; A. Bunge, Markland, Liverpool, N. S., 8141 bls. wood pulp screenings; 1st. Natl. Bank of Philadelphia, Uyo Maru, Kobe, 200 bls. cotton waste; J. M. Hagy Waste Works, Uyo Maru, Kobe, 75 bls. cotton waste; Guaranty Trust Co., Scanmail, Gdynia, 681 bls. wood pulp, 105 tons; Lagerloef Trading Co., Scanmail, Wiborg, 508 bls. mechanical pulp, 101 tons; Lagerloef Trading Co., Scanmail, Kotka, 170 bls. sulphite, 28 tons; J. W. Hampton, Jr., Scanmail, Kotka, 71 rolls newsprint; ———, Black Condor, Rotterdam, 253 bls. rags; National Vulcanized Fibre Co., Black Condor, Rotterdam, 203 bls. rags; E. J. Keller Co., Inc., Black Condor, ———, 217 bls. rags; Pagel Horton & Co., Inc., Argosy, Husum, 6140 bls. sulphate, 1000 tons; ———, Argosy, Sundsvall, 495 bdls. wall board; ———, Argosy, Iggesund, 1563 bls. wood pulp, 260 tons; ———, Breedyk, Rotterdam, 67 bls. rags; E. J. Keller Co., Inc., Breedyk, ———, 104 bls. rags; Philadelphia National Bank, Breedyk, Rotterdam, 19 bls. paper stock; ———, M. C. Holm, Antwerp, 174 bls. rags; Bulkley Dunton & Co., Boren, ———, 25 bls. wood pulp; Gottesman & Co., Inc., T. Fagelund, Sweden, 468 bls. wood pulp.

WILMINGTON IMPORTS

WEEK ENDING JUNE 22, 1935

Jay Madden Corp., Scanmail, Kotka, 178 rolls newsprint; Castle & Overton, Inc., Scanmail, Wiborg, 4103 bls. wood pulp, 820 tons; Lagerloef Trading Co., Scanmail, Wiborg, 2568 bls. sulphite, 513 tons; Lagerloef Trading Co., Scanmail, Helsingfors, 2470 bls. sulphite, 421 tons; Perkins Goodwin & Co., Argosy, Horneborg, 918 bls. chemical pulp, 250 tons.

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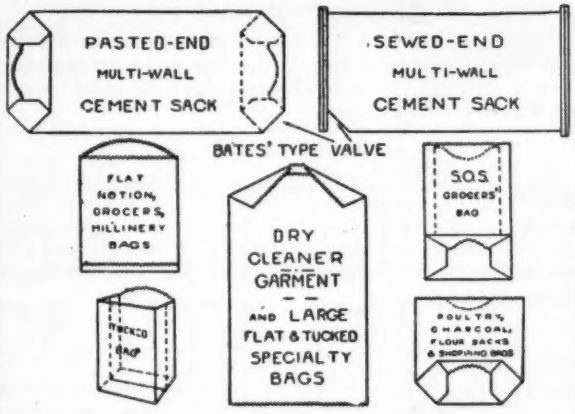
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SEWED-END MULTI-WALL CEMENT SACK
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FLAT NOTION, GROCERS, MILLINERY BAGS
DRY CLEANER GARMENT AND LARGE FLAT & TUCKED SPECIALTY BAGS
S.O.S. GROCERS' BAG
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Greaker, Norway
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Söderhamn, Sweden
CELLULOSEFABRIKS A.-G.
Bratislava, Czecho-Slovakei
SVANÖ AKTIEBOLAG
Svanö, Sweden

New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, June 26, 1935.

Steadiness prevails in the local paper market. Demand for the various standard grades of paper is about normal for the season. Sales forces of the leading paper organizations are generally optimistic over the outlook for the balance of the year. Prices are generally holding to schedule.

No radical changes transpired in the newsprint paper market. The volume of newspaper advertising is holding the gains established this year over the corresponding period of last year. Stocks at the mills are not excessive. The price situation, however, continues unsatisfactory.

The fine paper market continues to exhibit a strong undertone. Demand for book, cover, writing and ledger papers is fairly active. Prices are steady and unchanged. Tissues are moving freely. The coarse paper market is holding up well, with kraft specialties in good request for summer consumption.

Mechanical Pulp

Trading in the groundwood pulp market is listless. Manufacturing operations are being maintained in sufficient volume to take care of current requirements. Shipments against contract are moving slowly. Prices of the various grades of mechanical pulp are generally holding to previously quoted levels.

Chemical Pulp

The chemical pulp market continues steady. Both domestic and foreign bleached sulphite are displaying strength. The higher grades of kraft pulp are particularly strong, with offerings scarce and demand persistent. Other grades of chemical pulp are also holding up well. Prices remain unchanged.

Old Rope and Bagging

Demand for old rope is light. Both domestic and imported old manila rope are marking time. Small mixed rope is quiet. Old rope quotations, however, remain unchanged. The bagging market is in a strong position. Scrap and gunny bagging are steady to firm. The request for roofing bagging is brisk.

Rags

The domestic rag market is showing signs of improvement. Demand for new cotton rags is fairly active for the time of year. No. 1 white shirt cuttings and fancy shirt cuttings are in persistent request. Roofing grades are also displaying strength. Prices are well sustained, in most instances.

Waste Paper

Board mill demand for the lower grades of paper stock is improving slightly, especially for strictly folded news. Prices of these grades are steadier than of late. The higher grades of waste paper are fairly active. White envelope cuttings and hard and soft white shavings are firm.

Twine

Conditions in the local twine market are fairly satisfactory. Demand for the various varieties of twine is well sustained and there are no signs of any serious midsummer lull at present. Prices are generally steady and reports of concessions are infrequent.

H. Merton Joyce Dead

H. Merton Joyce, vice president and manager of sales of the Great Northern Paper Company, died Monday afternoon at Quogue House, Quogue, Long Island. He was 59 years old.

Mr. Joyce had been ill with a heart ailment for more than six months and came here eleven days ago in an effort to regain his health.

He was born at Potsdam, N. Y. After attending grade school there forty-five years ago he came to New York City and obtained a job as office boy with the St. Paul and Duluth Railroad. Ten years later when that concern was absorbed by the Northern Pacific Railroad, Mr. Joyce was asked by several of the executives of the St. Paul company to join the Great Northern company, which they had just started.

For thirty-five years he was associated with the paper company. Starting as a clerk, his ability and loyalty won him gradual promotion and at the time of his death he was also a director of the company.

Mr. Joyce served in the Spanish-American War as a member of the Seventy-first Regiment. He was a member of the Larchmont Shore Club, a member and a former director of the Siwanoy Country Club, a member of the Lake Placid Club and the Uptown Club of Philadelphia.

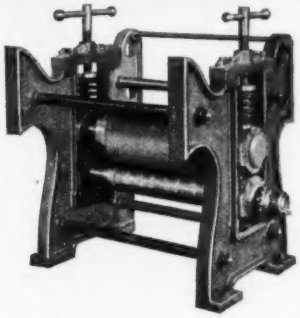
Surviving are his widow, Mrs. Adele Mae Van Slaick Joyce, with whom he made his home at 1 Park Lane, Mount Vernon, N. Y., and a son, Merton F. Joyce. Two brothers, Harry Ross Joyce of Brooklyn and Jeon Joyce of Potsdam and a sister in that city, Mrs. Winifred Kirkey, also survive.

No Processing Tax on Newsprint

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., June 26, 1935—Secretary of Agriculture, Henry A. Wallace has sent a letter to Jerome D. Barnum, president of the American Newspaper Publishers Association in connection with the controversy over processing taxes on newsprint paper. He says in part:

"No processing tax can be levied on newsprint. Under both the AAA Act and under the amendments pending to H. R. 8492, a processing tax can be levied only on agricultural commodities specifically defined as 'basic' or on commodities competing with them. Newsprint is neither a basic commodity nor competitive with any basic commodity. It is not subject to a processing tax; nevertheless, since you insist on imagining a processing tax could be levied on newsprint you are at liberty to submit to Congress or to the Senate Agricultural Committee, which is considering H. R. 8492, the amendment you propose specifically exempting newsprint, without any opposition by me."



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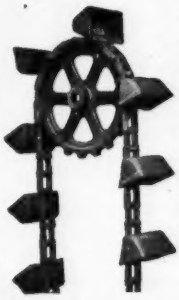

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Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, June 26, 1935.

BLANC FIXE.—Trading in the blanc fixe market is fairly active. Prices are holding to schedule, in most instances. The pulp is quoted at from $42.50 to $45 per ton, in bulk; while the powder is selling at from 3½ to 3¾ cents per pound, in barrels, at works.

BLEACHING POWDER.—The position of the bleaching powder market is practically unchanged. Contract shipments are moving regularly. Quotations are well maintained. Bleaching powder is quoted at from $1.90 to $2.15 per 100 pounds, in drums, at works.

CASEIN.—The casein market is quiet. Domestic standard ground is quoted at 11½ and finely ground at 12; Argentine standard ground at 13¼ and finely ground at 13½; French standard ground at 13½ and finely ground at 13¾ cents per pound, in bags, car lot quantities.

CAUSTIC SODA.—Some improvement transpired in the caustic soda market. Contract shipments are moving freely. Solid caustic soda is quoted at from $2.60 to $3.10; while the flake and ground are selling at from $3 to $3.05 per 100 pounds, in drums, at works.

CHINA CLAY.—The china clay market is exhibiting strength. Prices are holding to previously quoted levels. Imported china clay is quoted at from $13.50 to $21 per ton, ship side; while domestic paper making clay is selling at from $6.50 to $12 per ton, at mine.

CHLORINE.—Demand for chlorine is persistent. The contract movement is well up to average for the season. Prices are steady to firm. Chlorine is quoted at from $2 to $2.40 per 100 pounds, in tanks, or multi-unit cars, in ton lots, or over, at works.

ROSIN.—The rosin market is fairly active. Paper making gum rosin is quoted at $4.35 and wood rosin at $4.35 per 280 pounds, gross weight, in barrels, at Savannah. Seventy per cent rosin size is selling at $2.56 per 100 pounds, in tank cars, at works.

SALT CAKE.—Paper mill demand for salt cake is brisk. Prices are holding to schedule. Salt cake is quoted at from $12 to $13, and chrome salt cake at from $11 to $12 per ton, at works. Imported salt cake is selling at from $12 to $13 per ton, on dock.

SODA ASH.—Conditions in the soda ash market are fairly satisfactory. The contract movement is normal. Prices remain unchanged. Quotations on soda ash, in car lots, at works, per 100 pounds, are as follows: in bulk, $1.05; in bags, $1.20; and in barrels, $1.50.

STARCH.—The starch market is marking time. Demand from the paper mills is fairly good for the season. Prices are steady and unchanged. Special paper making starch is quoted at $3.59 per 100 pounds, in bags; and at $3.86 per 100 pounds, in barrels, at works.

SULPHATE OF ALUMINA.—Steadiness prevails in the sulphate of alumina market. Prices are holding to formerly quoted levels. Commercial grades are selling at from $1.35 to $1.50; while iron free is offered at from $1.90 to $2.05 per 100 pounds, in barrels, at works.

SULPHUR.—The sulphur market is steady. Sulphur is quoted at $18 per long ton on orders of 1,000 tons, or over, on yearly contracts; and at $20 per ton on any smaller quantity over that period. On spot and near by car loads, the quotation is $21 per ton.

TALC.—Business in the talc market is rather quiet at present. Shipments against contract are moving slowly. Domestic talc is still quoted at from $16 to $18 per ton, at eastern mines; while imported talc is selling at from $23 to $30 per ton, on dock.

Market Quotations

Paper

(F. o. b. Mill)			
Ledgers	6.50	@	—
Bonds	6.00	@	—
Index	6.00	@	—
Writings—			
Extra Superfine	6.50	@	—
Superfine	6.25	@	—
Tub sized	5.75	@	—
Engine sized	5.50	@	—
Book, Cased—			
S. & S. C.	5.35	@	5.75
S. & S. C. Litho.	5.60	@	6.00
M. F.	5.10	@	5.50
Coated and Enamel	5.90	@	6.55
Coated Litho	5.90	@	6.55
Tissues—Per Ream—			
White No. 1	.82½	@	.85
White No. 2	.67½	@	—
Anti-Tarnish M. G. only	1.00	@	—
Colored	.85	@	—
Kraft	.70	@	—
Manila	.67½	@	.70
Manila—			
No. 1 Jute	9.00	@	9.25
No. 2 Jute	7.75	@	8.50
No. 1 Wood	4.00	@	5.25
No. 2 Wood	3.50	@	4.00
Butchers	4.00	@	4.50
Fibre Papers—			
No. 1 Fibre	4.25	@	5.50
No. 2 Fibre	4.00	@	4.75
Common Bogus	1.50	@	3.00
Screenings	2.50	@	3.50
Glassine—			
Bleached	.11	@	—
Unbleached	.09	@	—

(The following Quotations are Delivered New York)

News, per ton—			
Roll, contract	40.00	@	—
Rolls, spot	40.00	@	—
Sheets	45.00	@	—
Kraft—			
No. 1 Northern	4.12½	@	4.75
Standard	4.00	@	—
Southern	3.87½	@	—
Boards—per ton—			
News	32.50	@	35.00
Chip	30.00	@	32.50
Sgl. Mla. Ll. Chip	45.00	@	47.50
Jute Lined Chip	45.00	@	47.50
White Patent Coated	55.00	@	57.50
Binders Boards	67.00	@	75.00

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—			
Moist	21.00	@	22.00
Dry	21.00	@	22.00
(F.o.b. Mill)			
No. 1 Domestic and Canadian	18.00	@	24.00

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—			
Division 1	2.60	@	—*
Division 2	2.55	@	—*
Division 3	2.50	@	—*
Prime Qualities—			
Class 1. All Prime Easy Bleaching	2.05	@	—*
Other Than Easy Bleaching—			
Class 2. Higher Than Standard	2.00	@	—*
Class 3, Standard	1.95	@	—*
Class 4. Lower than Standard	1.90	@	—
(On Dock, Atlantic Ports)			
Kraft No. 1	1.70	@	1.80
Kraft No. 2	1.50	@	1.60
(F.o.b. Pulp Mill)			
Kraft Domestic	1.70	@	2.35
(Delivered)			
Soda Bleached	2.50	@	—

*Add 60 Cents per short ton, dock charges, for Albany; $2.00 for Lake Ports East and $3.00 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	5.75	@	6.00
Silesias No. 1	3.75	@	4.00
New Unbleached	6.25	@	6.50
New Soft Blacks	3.00	@	3.25
Blue Overall	3.50	@	3.75
Fancy	2.50	@	2.75
Washables	1.75	@	2.00
Mixed Khaki Cuttings	3.00	@	3.25
O. D. Khaki Cuttings	3.75	@	4.00
Men's Corduroy	1.50	@	1.75
New Mixed Blacks	2.50	@	2.75

Old Rags

White, No. 1—			
Repacked	3.00	@	3.50
Miscellaneous	2.75	@	3.25
White, No. 2—			
Repacked	1.75	@	2.25
Miscellaneous	1.50	@	1.75
Thirds and Blues—			
Repacked	1.50	@	1.75
Miscellaneous	1.25	@	1.50
Black Stockings	2.50	@	3.00
Roofing Rags—			
No. 1	1.25	@	1.30
No. 2	1.10	@	1.15
No. 3	.95	@	1.00
No. 4	.95	@	1.00
No. 5A	.80	@	.85

Foreign Rags

New Rags

New Dark Cuttings	1.75	@	1.85
New Mixed Cuttings	1.80	@	1.90
New Light Silesias	3.75	@	4.00
Light Flannelettes	3.75	@	4.00
Unbleached Cuttings	6.50	@	6.75
New White Cuttings	6.50	@	6.75
New Light Oxfords	3.25	@	3.50
New Light Prints	2.75	@	3.00

Old Rags

No. 1 White Linens	7.50	@	8.00
No. 2 White Linens	6.50	@	7.00
No. 3 White Linens	4.50	@	5.00
No. 4 White Linens	2.25	@	2.50
No. 1 White Cottons	4.25	@	4.75
No. 2 White Cottons	3.25	@	3.75
No. 3 White Cotton	2.50	@	2.75
No. 4 White Cotton	1.90	@	2.15
Extra Light Prints	2.00	@	2.25
Ord. Light Prints	1.75	@	1.85
Med. Light Prints	1.55	@	1.65
Dutch Blue Cottons	1.75	@	1.85
French Blue Linens	2.30	@	2.40
German Blue Linens	2.15	@	2.25
German Blue Cottons	1.70	@	1.80
Checks and Blues	1.30	@	1.40
Linsey Garments	1.50	@	1.65
Dark Cottons	1.15	@	1.25
Old Shopperies	1.00	@	1.05
New Shopperies	.95	@	1.05
French Blues	1.70	@	1.80

Old Rope and Bagging

(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—			
Foreign	1.60	@	1.70
Domestic	1.45	@	1.55
Wool Tares, light	1.65	@	1.70
Wool Tares, heavy	1.75	@	1.80
Bright Bagging	1.65	@	1.70
Manila Rope			
Foreign	1.85	@	2.00
Domestic	1.75	@	2.00
Small Mixed Rope	1.10	@	1.35
New Burlap Cut	2.00	@	2.35
Hessian Jute Threads—			
Foreign	2.60	@	2.75
Domestic	2.80	@	3.00

Old Waste Papers

(F. o. b. New York)

Shavings—			
White Envelope Cuttings	2.50	@	2.60
Ordinary Hard White No. 1	2.10	@	2.15
Hard White No. 2	1.90	@	2.00
Soft White No. 1	1.70	@	1.80
Flat Stock—			
Stitchless	.65	@	.75
Over issue Mag.	.65	@	.75
Solid Flat Book	.45	@	.50
Crumpled No. 1	.35	@	.40
Solid Book Ledger	1.50	@	1.65
Ledger Stock	1.00	@	1.10
New B. B. Chips	.30	@	.35
Manilas—			
New Env. Cut	1.70	@	1.80
New Cuttings	1.35	@	1.45
Print	Nominal		
Bogus Wrapper	.40	@	.50
Container	Nominal		
Old Kraft Machine—			
Compressed bales	1.10	@	1.20
News—			
No. 1 White News	1.20	@	1.30
Strictly Overissue	.60	@	.65
Strictly Folded	.20	@	.25
No. 1 Mixed Paper	.20	@	—

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PAPER TRADE JOURNAL

Vol. C JUNE 27, 1935 No. 26

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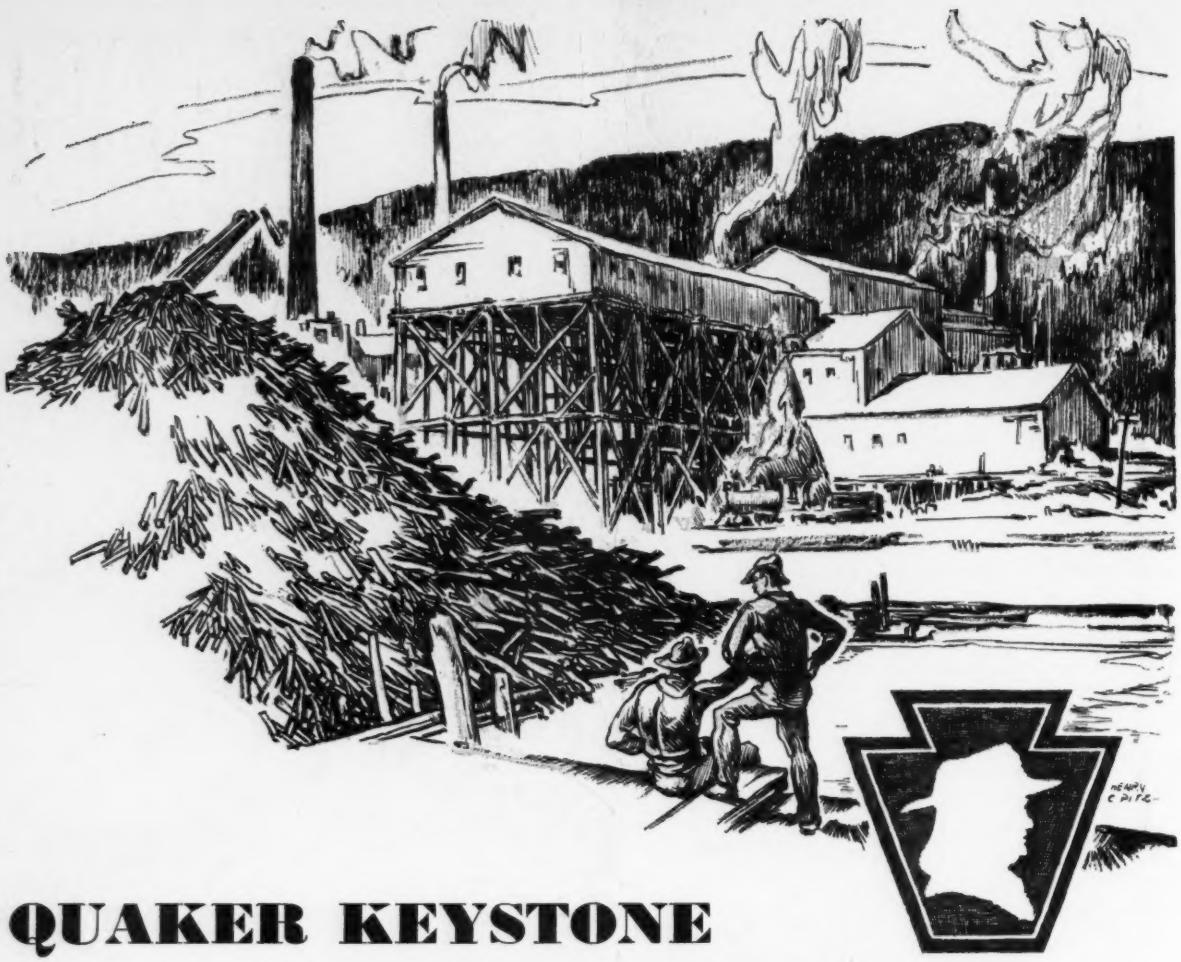

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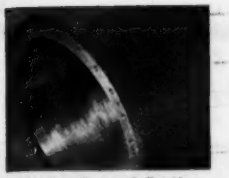
Entered as second class matter at the Post Office at East Stroudsburg, Pa., under the Act of Congress of March 3, 1879. Published every Thursday by the Lockwood Trade Journal Co., at 34 N. Crystal St., East Stroudsburg, Pa. Executive and Editorial offices: 15 W. 47th St., New York, N. Y. Domestic subscription U. S. and possessions, $4.00 per year. 10 cents per copy.



Rubber-Covered Suction Roll

High-Speed Shake

Hypoid Bevel Gear Drive

Silent Chain Dryer Drive

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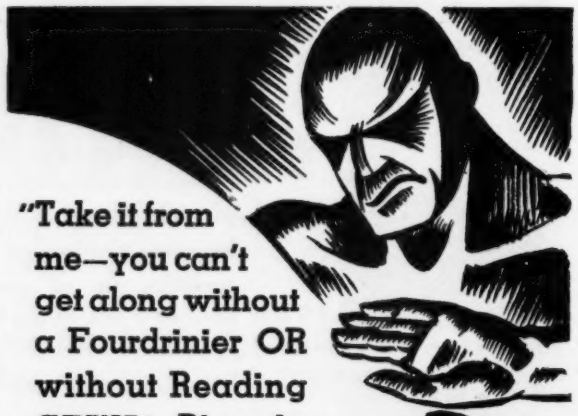

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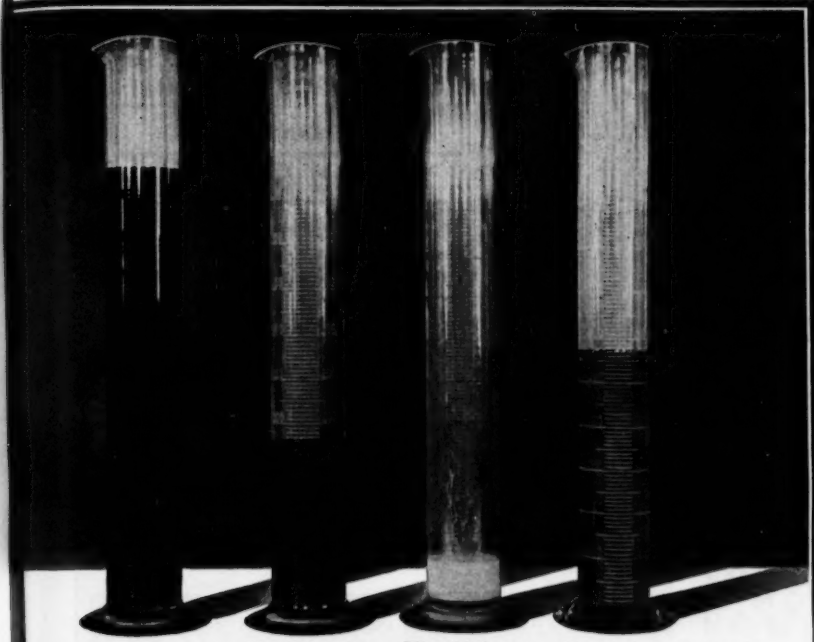
Refined by Gulf's Multi-Sol Process

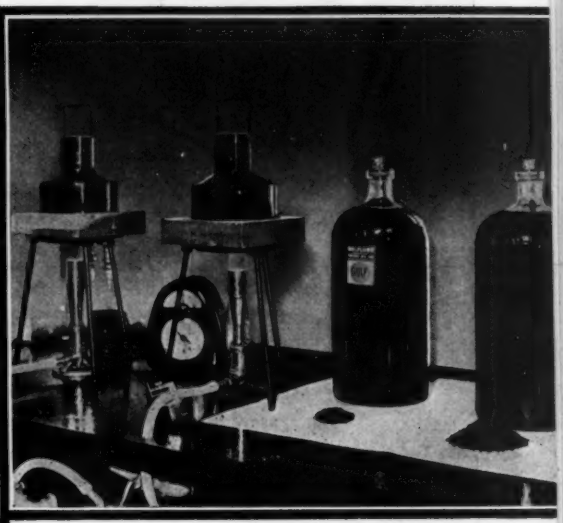


Above is a sample of the original charge of lubricating stock as it goes to the Multi-Sol plant.

Here is the quantity of carbon and sludge forming impurities removed by the Multi-Sol process.

The third test tube contains the solid paraffin wax removed by this efficient refining process.

Above is shown the quantity of the pure Gulflube Motor Oil after dewaxing, filtering, etc., secured from the original lubricating stock fractionated from the crude.



The photograph above shows the quantity of carbon that is removed by the Conradson carbon residue test when applied to a gallon of the new Gulflube Motor Oil and a gallon of another widely distributed brand of motor oil.

Above is a general view of Gulf's new Multi-Sol plant at the Girard Point Refinery, Philadelphia, Pa.

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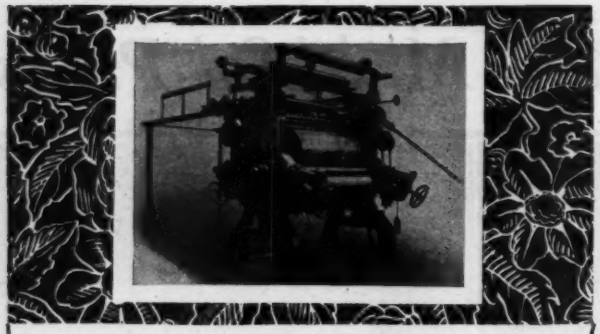

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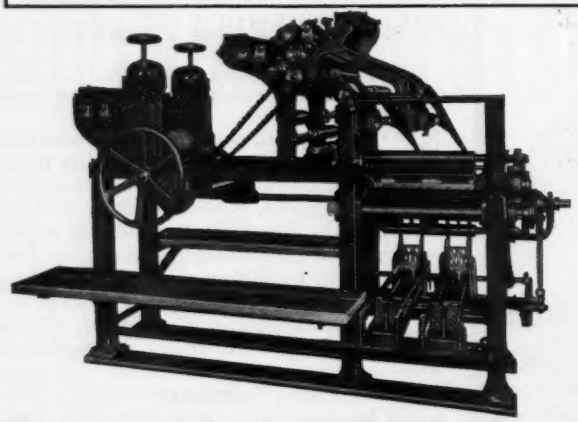

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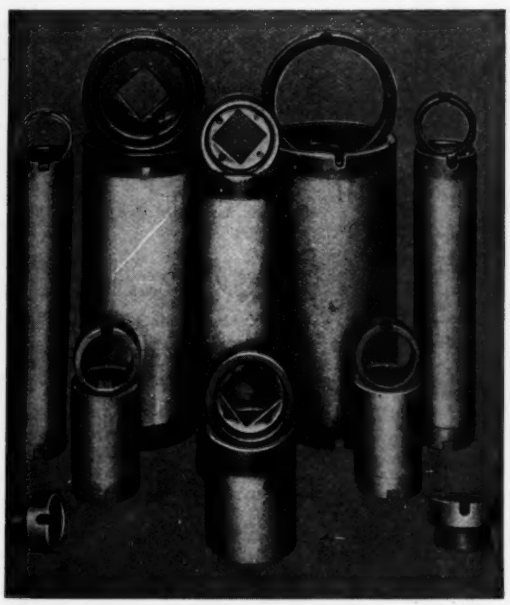

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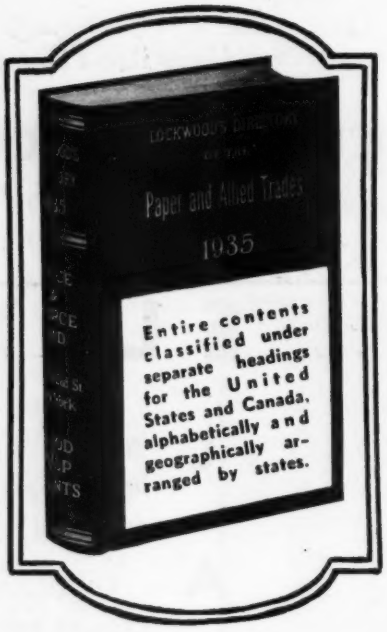
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1935
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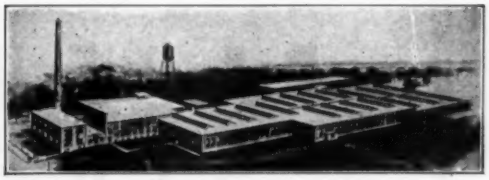

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No. 2 Kraft	3.88	@	4.25
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85 Test, per 1000 sq. ft.			1.70
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Ledger & Writings	.70	@	.80
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Blanks	1.00	@	1.05
Krafts	.80	@	.90
New Kraft Cuts	1.20	@	1.30
Manila Env. Cuts	1.25	@	1.30
Ex. No. 1 Manila	.90	@	1.00
Print Manila	.40	@	.50
Overissue News	.40	@	.45
Old Newspapers—			
No. 1	.30	@	.35
Mixed Papers—			
No. 1	.15	@	.20
Roofing Stocks—			
No. 1	30.00	@	—
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Writings—			
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Superfine	.10	@	.18
Extra Fine	.15	@	.20
Fine	.15	@	.24
Fine, No. 2	.10	@	.25
Book, M. F.	.05¼	@	.06¾
Book, S. S. & C.	.05½	@	.07½
Book, Coated	.06½	@	.09
Coated Lithograph	.06¾	@	.08½
Label	.07	@	.11
No. 1 Jute Manila	6.25	@	—
Manila Sul., No. 1	5.25	@	—
Manila No. 2	3.75	@	—
No. 1 Kraft	5.00	@	—
Southern Kraft	4.75	@	—
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Silesias, No. 1	.03	@	.03½
Black Silesias, soft	.02½	@	.03
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Washable, No. 1	01½	@	.02
Blue Overall	.03½	@	.04
Cottons—According to grades—			
Washable, No. 2	.02½	@	.03
New Blue	.01½	@	.03
Fancy	.01½	@	.03
New Black Soft	.02	@	.04
New Light Seconds	.01½	@	.02
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No. 2	.80	@	1.00
Wool Tares, heavy	2.75	@	—
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No. 2 Hard White	1.90	@	2.00
No. 1 Soft White	1.80	@	1.85
No. 2 Soft White	1.25	@	1.30
No. 1 Mixed	—	@	.75
Solid Ledger Stock	1.50	@	1.60
Writing Paper	1.00	@	1.10
No. 1 Books, heavy	.55	@	.60
No. 1 New Manila	1.35	@	1.40
Print Manila	.50	@	.60
Container Manila	.45	@	.50
Old Kraft	1.00	@	—
No. 1 Mixed Paper	.20	@	—
Straw Board Chip	.20	@	—
Binders Board Chip	.20	@	—
Corrugated Board	.40	@	—
Overissue News	.50	@	—
Old Newspapers	.30	@	—

BOSTON

Paper
(F. o. b. Mill)

Ledgers—			
Sulphite	.06	@	.12½
Rag Content	.12	@	.30
All Rag	.36	@	.52½
Bonds—			
Sulphite	.07¼	@	.11
Rag Content	.12	@	.30
All Rag	.36	@	.65
Writings	.06½	@	.20
Superfines	.11	@	.31
Book, Super	.06	@	.09
Book, M. F.	.05½	@	.08½
Book, Coated	.08½	@	.18
Coated Litho	.09	@	.12
Label	09½	@	.15
Jute Manila No. 1	.11	@	.13
Manila, Sul. No. 1	.04¾	@	.06¼
Manila, Sul. No 2	.03¾	@	.04½
No. 1 Kraft	.04¾	@	.05
No. 2 Kraft	.04½	@	.04¾
(F. o. b. Boston)			
Southern Kraft	.03½	@	.04¾
(F. o. b. destination in carload lots, f. o. b. mill in less than carload lots.)			
Common Bogus	.02	@	.02¾
(Delivered New England points)			
News Print Rolls	39.50	@	—
Straw Board, rolls	.009	—	@35.00
Straw Board in Sheets, basis 35s to 70s	—	@	40.00
Filled News Board	40.00	@	45.00
Chip Board	37.50	@	40.00
Chip Board (Creasing)	37.50	@	40.00
Single Manila Lined Chip	47.50	@	52.50
Single White, Patent Coated News Board (Bender)	55.00	@	65.00
Wood Pulp Board	70.00	@	75.00
Binder Boards (Standard Grade)	67.00	@	75.00

Old Papers
(F. o. b. Boston)

Shavings—			
No. 1 Hard White	2.00	@	2.20
No. 1 Soft White	1.75	@	1.90
No. 2 Mixed	.75	@	.80
Solid Ledger Books	1.40	@	1.50
Overissue Ledger Stock	1.15	@	1.30
Mixed Ledgers	.85	@	.90
No. 1 Books, heavy	.55	@	.65
No. 1 Books, light	.50	@	.60
Crumpled Stitchless Book Stock	.60	@	.60
Manila Env. Cuttings	1.30	@	1.40
No. 1 Old Manila	.60	@	.65
White Blank News	1.15	@	1.20
No. 1 Kraft	.90	@	.95
Mixed Papers	.17½	@	.20
Print Manila	.40	@	.45
Container Manilas	.25	@	—
Overissue News	—	@	.35
Old Newspapers	.25	@	.27½
Box Board Chips	—	@	.25
Corrugated boxes	.32½	@	.37½
Screening Wrappers	.40	@	.45

Bagging
(F. o. b. Boston)

Manila Rope—			
Foreign	1.90	@	2.00
Domestic	1.50	@	1.75
Transmission Rope	.90	@	1.00
Jute Rope	1.50	@	1.60
Jute Carpet Threads	.65	@	.70
Gunny No. 1—			
Foreign	1.80	@	—
Domestic	1.35	@	—
Bleachery Burlap	4.00	@	4.50
Scrap Burlap			
Foreign	1.75	@	1.85
Domestic	1.30	@	1.35
Scrap Sisal	1.05	@	1.15
Scrap Sisal for Shredding	1.10	@	1.25
Wool Tares, heavy	1.30	@	1.35
New Burlap Cuttings	1.60	@	1.75
Australian Wool Pouches	2.50	@	2.75
Heavy Baling Bagging	1.40	@	1.50
Paper Mill Bagging	1.25	@	—
Bagging No. 2	.70	@	.75

Domestic Rags (New)
(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.01¾	@	.02
New White No. 1	.05½	@	.06
New White No. 2	.03½	@	.04
Silesias No. 1	.04¼	@	—
New Black Silesias	.02½	@	.03
Soft Unbleached	.06¼	@	.06½
Blue Cheviot	—	@	4.65
Fancy	.0195	@	.021
Washable	.0165	@	.0170
Cottons—According to grades—			
Blue Overalls	.04	@	—
New Black, soft	04	@	04½
Khaki Cuttings	.03½	@	.03¾
O. D. Khaki	.03	@	.03¼
Corduroy	.01¾	@	.02
New Canvas	—	@	.03
B.V.D. Cuttings	—	@	.06¼

Domestic Rags (Old)
(F. o. b. Boston)

Canvas	.04½	@	
White No. 1—			
Repacked	—	@	2.75
Miscellaneous	2.50	@	2.75
White No. 2—			
Repacked	1.90	@	2.00
Miscellaneous	2.00	@	2.25
Twos and Blues	1.25	@	1.50
Thirds and Blues			
Repacked	2.00	@	2.75
Miscellaneous	2.00	@	2.25
Black Stockings	2.50	@	3.00
Roofing Stock			
No. 1	1.20	@	1.25
No. 2	.95	@	1.00
No. 3	—	@	.65

Foreign Rags
(F. o. b. Boston)

Dark Cottons	1.25	@	1.40
New White Shirt Cuttings	5.50	@	6.00
Dutch Blues	2.00	@	2.50
New Checks & Blues	2.50	@	3.00
Old Fustians	1.75	@	—
Old Linsey Garments	—	@	1.95

TORONTO

Paper
(F. o. b. Mill)

Bond—			
No. 1 Sulphite	.11	@	—
No. 2 Sulphite	.08½	@	—
No. 1 Colored	.12	@	—
No. 2 Colored	.09	@	—
Ledgers (sulphite)			
Ledgers, No. 1	.34½	@	—
Ledgers, No. 2	.25½	@	—
Writing	.09	@	.09½
Book—			
No. 1 M. F. (Carloads)	6.50	@	—
No. 2 M. F. (Carloads)	6.00	@	—
No. 3 M. F. (carloads)	5.00	@	—
No. 1 S. C. (carloads)	7.00	@	—
No. 2 S. C. (carloads)	6.50	@	—
No. 3 S. C. (carloads)	5.20	@	—
No. 1 Coated and Litho	12.00	@	—
No. 2 Coated and Litho	10.50	@	—
No. 3 Coated and Litho	9.50	@	—
Coated tinted	13.00	@	—
Wrapping—delivered			
Rag Brown	4.75	@	—
White Wrap	3.50	@	—
"B" Manila	5.25	@	—
No. 1 Manila	5.40	@	—
Fiber	5.40	@	—
Kraft, M. F.	5.90	@	—
Kraft No. 2	5.40	@	—

(F.O.B. Cars Toronto)

News, per ton—			
Rolls (contract)	39.50	@	—
Sheets	42.00	@	—

Pulp
(F. o. b. Mill)

Ground wood	27.00	@	—
Unbleached sulphite	42.00	@	—
Book (Class 1)	58.00	@	—
Writing (Class 2)	59.00	@	—
Select (Class 3)	60.00	@	—

Old Waste Paper
(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut	2.00	@	2.30
Soft White	1.60	@	1.90
White Blk. News	1.25	@	1.40
Book and Ledger—			
Flat Magazine and Book Stock (old)	.90	@	1.00
Light and Crumpled Book Stock	.80	@	.90
Ledgers and Writings	1.00	@	1.05
Manilas—			
New Manila Cut	1.25	@	1.40
Printed Manilas	.50	@	.60
Kraft	1.00	@	1.60
News and Scrap—			
Strictly Overissue	.60	@	—
Strictly Folded	.50	@	—
No. 1 Mixed Paper	.40	@	—

Domestic Rags
(Price to mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	.06	@	—
Fancy Shirt Cuttings	.02	@	—

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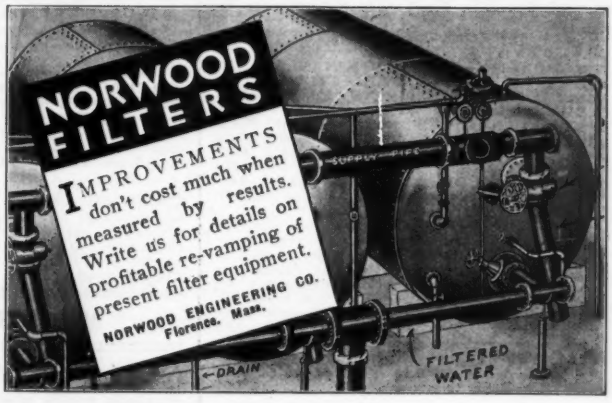
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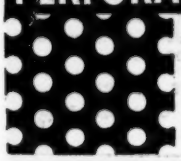

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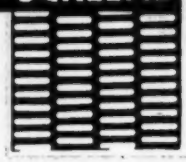

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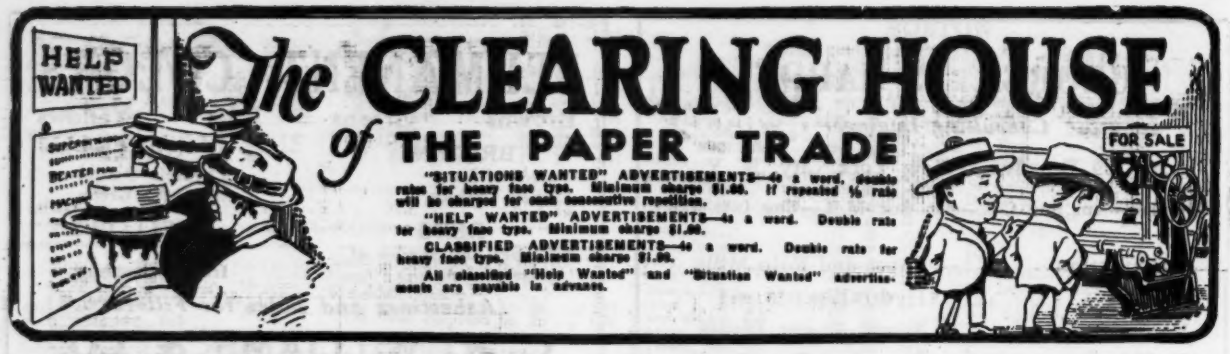
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WANTED—Machine Tenders and Back Tenders on Cylinder board machine. Address Box 35-282, care Paper Trade Journal. J-27

WANTED—Experienced paper bag salesmen to cover states of Ohio, Michigan and Indiana for a large eastern paper bag manufacturer. Salary and Commission. Give full details concerning experience, age and character. Confidential. Address Box 35-326, care Paper Trade Journal. J-4

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KRAFT Pulp and Paper Mill has opening for experienced CHEMIST to take charge of Laboratory work. In reply state all details concerning training and experience, also salary expected. Applicants able to read German periodicals have preference. Address Box 35-312, care Paper Trade Journal. J-4

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Smith & Winchester Mfg. Co.

CALENDER DOCTORS
Downingtown Mfg. Co.
Ticonderoga Machine Works

CALENDER ROLL GRINDERS
Farrel-Birmingham Co.
Lobdell Car Wheel Co.
Smith & Winchester Mfg. Co.
Ticonderoga Machine Works

CALENDER ROLLS
Farrel-Birmingham Co.
Lobdell Car Wheel Co.
Perkins & Son, Inc., B. F.
Smith & Winchester Mfg. Co.
Waldron, Corp., John

CALIPERS (Micrometer Reil)
Farrell-Birmingham Co.
Lobdell Car Wheel Co.

CAMERAS (Photomicrographic)
Bausch & Lamb Optical Co.

CARBON BISULPHIDE
Pennsylvania Salt Co.

CASEIN
American Cyanamid & Chemical Corp.
The Casein Manufacturing Co. of America
Paper Makers Chemical Corp.

CASING
The Reading Iron Co.

CASTINGS
D. J. Murray Mfg. Co.
International Nickel Co.
Farrel-Birmingham Co.
Lobdell Car Wheel Co.
Montague Machine Co.
Smith & Winchester Mfg. Co.
The Frederick Iron & Steel Co.
Pusey and Jones Corp.

CASTINGS (Brass, Bronze, Iron)
Downingtown Mfg. Co.
Smith & Winchester Mfg. Co.

CASTING (Chrome Nickel Alloy)
Lobdell Car Wheel Co.

CASTINGS (Iron)
Downingtown Mfg. Co.
Hamblet Machine Co.
Link-Belt Co.
The Frederick Iron & Steel Co.

CAUSTIC SODA
American Cyanamid & Chemical Corp.
Mathieson Alkali Works, Inc.
Paper Makers Chemical Corp.
Pennsylvania Salt Mfg. Co.

CELLULOSE BAG MACHINERY
Potdevin Machine Co.

CEMENT
Stebbins Engrg. & Mfg. Co.

CENTRIFUGAL MACHINERY (Special)
De Laval Steam Turbine Co.

CHAIN DRIVES
Link-Belt Co.

CHEMICALS
American Cyanamid & Chemical Corp.
E. I. DuPont de Nemours & Co., Inc.
Electro Bleaching Gas Co.
General Dyestuff Corp
Geigy Co., Inc.
Gottesman & Co., Inc.
Paper Makers Chemical Corp.
Pennsylvania Salt Co
Williams & Co., C. K.

CHIPPERS
D. J. Murray Mfg. Co.
Valley Iron Works Co.

CHIP SCREENS
D. J. Murray Mfg. Co.
Fibre Making Processes, Inc.

CHLORINATING APPARATUS
Stebbins Engrg. & Mfg. Co.

CHLORINE
Electro Bleaching Gas Co.
Mathieson Alkali Works, Inc.
Pennsylvania Salt Co.

CHROME PLATE
Chromium Corporation of America

CHUCKS
John Waldron Corp.

CIRCULATING SYSTEMS (Digester)
Fibre Making Processes, Inc.

CLAY
American Cyanamid & Chemical Corp.
English China Clays Sales Corp.
Paper Makers Importing Co.
Vanderbilt Co., R. T.

CLEANING MATERIALS
Magnus Chemical Co.
Philadelphia Quartz Co.

CLUTCHES
D. J. Murray Mfg. Co.
Link-Belt Co.
Moore & White Co.
Pusey and Jones Corp.
T. B. Wood's Sons

CLUTCH PULLEYS
Moore & White Co.
T. B. Wood's Sons

COATING MACHINERY
Moore & White Co.
Potdevin Machine Co.
Waldron Corporation, John
Weber, Herman G.

COATING MATERIALS
Paper Makers Chemical Corp.

COATINGS, Protective
Stebbins Engrg. & Mfg. Co.

COCKS, Lubricated
Crane Company

COGS
Bowsher, N. P., The

COLLAPSIBLE WINDER SHAFTS
Moore & White Co.

COLORIMETERS
Bausch & Lomb Optical Co.

COLOR ANALYZERS
Thwing Instrument Co.

COLOR MIXING EQUIPMENT
Waldron, John, Corp.

COMBINING MACHINES
Waldron Corp., John

COMPOUNDS, Acid Resisting
Stebbins Engrg. & Mfg. Co.

COMPRESSORS (Air)
Allis-Chalmers Mfg. Co.

COMPRESSORS (Centrifugal)
De Laval Steam Turbine Co.

CONSISTENCY REGULATOR
Merritt Engineering & Sales Corp., The
Trimbey Machine Works

CONTINUOUS BEATER ATTACHMENTS
E. D. Jones & Sons Co.

CONTINUOUS BEATERS
E. D. Jones & Sons Co.
Improved Paper Mchy. Corp.
Valley Iron Works Co.

CONTINUOUS BEATER WATER FEEDER
Control Equipment Corp.
Merritt Engineering & Sales Corp., The
Trimbey Machine Works.

CONTRACTORS, Engineering
Stebbins Engrg. & Mfg. Co.

CONTROLLING INSTRUMENTS
Bristol Co., The
Cambridge Instrument Co.
Control Equipment Corp.
Merritt Engineering & Sales Corp., The
Testing Machines, Inc.
Thwing Instrument Co.

CONTROLS (Electric)
Thwing Instrument Co.

CONVEYOR CHAINS
Link-Belt Co.

CONVEYORS (Trim)
Link-Belt Co.
Ross Engineering Corp., J. O

COOKING & RECOVERY PROCESS
Chemipulp Process, Inc.
Fibre Making Processes, Inc.
Ross Engineering Corp., J. O

COOLERS
Stebbins Engrg. & Mfg. Co.

CORES (Paper)
Climax Tube Co.
Elixman Paper Co.

CORES (Steel)
Smith & Winchester Mfg. Co.

COTTON CALENDER ROLLER
Perkins & Son, Inc., B. F.

COUCH ROLLS
American Wringer Co.
Beloit Iron Works
D. J. Murray Mfg. Co.
Goodrich Rubber Co., B. F.
Montague Machine Co.
Moore & White Co., The
The Manhattan Rubber Mfg Division of Raybestos-Manhattan, Inc.
Pusey and Jones Corp.

COUPLINGS
Chain Belt Co.
De Laval Steam Turbine Co.
Philadelphia Gear Works
T. B. Wood's Sons
The Frederick Iron & Steel Co.
The Reading Iron Co.
Waldron Corp., John
Walworth Co.

CREPING MACHINES
Beloit Iron Works
Downingtown Mfg. Co.
Hudson Sharp Machine Co.
Paper Converting Machine Co., Inc.
John Waldron Corp.

CUTTERS
Downingtown Mfg. Co.

CYLINDER RAILROAD AND DEVIL DUSTER
Moore & White Co.

CYLINDER DRIVES
Moore & White Co., The

CYLINDER MOULDS
Beloit Iron Works
D. J. Murray Mfg. Co.
Improved Paper Mchy. Corp.
Downingtown Mfg. Co.

CYLINDER MOULD COVERINGS
Durkee Co., The F. G.

CYLINDER WIRES
Appleton Wire Works
International Wire Works

DAMPENERS
Perkins & Son, Inc., B. F.

DANDY ROLLS
Durkee Co., The F. G.

DECKERS
D. J. Murray Mfg. Co.
Improved Paper Mchy. Corp.
Montague Machine Co.
Oliver United Filters Inc.
Valley Iron Works

DEFOAMERS
National Oil Products Co.

DENSITY REGULATOR
Control Equipment Corp.

DIE CUTTERS
Appleton Machine Co., The
Merritt Engineering & Sales Corp., The

DIFFUSER EQUIPMENT
Fibre Making Processes, Inc.

DIGESTERS
Pusey & Jones Corp
Stebbins Engrg. & Mfg. Co.

DIGESTER FITTINGS
W. J. Murray Mfg. Co.

DIGESTER LININGS
Stebbins Engrg. & Mfg. Co.

WHERE TO BUY

DOCTOR BLADES
Goodrich Rubber Co., B. F.
Improved Paper Mchy. Corp.
International Nickel Co.
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan. Inc

DRAINAGE SYSTEMS
Stickle Steam Specialties Co.

DRIVES
W. J. Murray Mfg. Co.

DRIVE STANDS
Beloit Iron Works
Moore & White Co.
Pusey and Jones Corp.

DRIVES (Paper Machinery)
Beloit Iron Works
Farrel-Birmingham Co.
General Electric Co.
Link-Belt Co.
Pusey & Jones Corp.

DRYING SYSTEMS
Ross Engineering Corp., J. O.
Waldron Corporation, The

DUSTING MACHINERY
Fibre Making Processes, Inc.
Jones & Sons Co., E. D.
Moore & White Co.

DUSTERS (Chip)
D. J. Murray Mfg. Co.
Fibre Making Processes, Inc.

DYESTUFFS & COLORS
E. I. DuPont de Nemours & Co.
General Dyestuff Corp.
Heller & Merz
Geigy Co., The
National Aniline & Chemical Co.
United Color & Pigment Co.
C. K. Williams & Co.

ELECTRIC EQUIPMENT
Allis-Chalmers Mfg. Co.
General Electric Co.

EMBOSSING CALENDERS
Perkins & Sons, Inc., B. F.
Textile Finishing Machinery

EMBOSSING MACHINES
Hudson Sharp Machine Co.
Paper Converting Machine Co.
John Waldron Corp.

EMBOSSING ROLLS
The Appleton Machine Co.
Hudson Sharp Machine Co.
B. F. Perkins & Son, Inc.
Textile Finishing Mchy. Co.
Waldron Corporation, John

EXHAUST FANS
Propellair, Inc.

EXTRACTORS
Downingtown Manufacturing Co.
Valley Iron Works Co.

FANS
E. D. Jones & Sons Co.
B. F. Perkins & Son, Inc.
Propellair, Inc.
Ross Engineering Co., J. O.

FAN PUMPS
Beloit Iron Works
Moore & White Co.
Pusey and Jones Corp.
Valley Iron Works Co.
Smith & Winchester Mfg. Co.

FELT CARRIER ROLLS
American Wringer Co.
Beloit Iron Works
Downingtown Mfg. Co.
Goodrich Rubber Co., B. F.
Pusey and Jones Corp.

FELT CLEANERS
Magnus Chemical Co.

FELTS AND JACKETS
Appleton Woolen Mills
Bulkley, Dunton & Co.
Draper Bros. Co.
Fitchburg Duck Mills
Huyck & Son, E. C.
Knox Woolen Co.
Lockport Felt Co.
Orr Felt & Blanket Co.
Philadelphia Felt Co.
Shuler & Benninghofen
Turner, Halsey Co.
Waterbury Felt Co.

FELT GUIDES
Moore & White Co.

FELT SOAPS
Magnus Chemical Co.

FELT TIGHTENER (Automatic)
Pusey and Jones Corp.
John Waldron Corp.

FILLINGS (Jordan)
International Nickel Co.

FILTERS
Improved Paper Mchy. Corp.
Moore & White Co.
Norwood Engrg. Co.
Oliver United Filters Inc.
J. O. Ross Engrg. Corp.
Stebbins Engrg. & Mfg. Co.

FILTER CLEANERS
Magnus Chemical Co.

FILTER WIRES
Appleton Wire Works

FITTINGS, Pipe (Plain end or flanged)
Crane Company
Taylor Forge & Pipe Works
Walworth Company

FITTINGS, Pipe Welding
Taylor Forge & Pipe Works

FLANGES
Crane Company
Walworth Co.

FLANGES, Pipe (Forged Steel)
Taylor Forge & Pipe Works

FLAT SCREENS
The Appleton Machine Co.
Beloit Iron Works
D. J. Murray Mfg. Co.
Downingtown Mfg. Co.

FLEXIBLE COUPLINGS
De Laval Steam Turbine Co.
The Frederick Iron & Steel Co.
Link-Belt Co.
Philadelphia Gear Works
John Waldron Corp.
T. B. Wood's Sons

FLEXIBLE SLICE
E. D. Jones & Sons Co.

FLEXIBLE STEEL LACING
Flexible Steel Lacing Co.

FLOORING
Stebbins Engrg. & Mfg. Co.

FLOOR TILE (Non-Slip)
Carborundum Co.
Norton Co.

FLY BARS
Dilts Machine Works, Inc.
Jones & Sons Co., E. D.

FOLDING ENDURANCE TESTERS
Testing Machines, Inc.

FOLDING MACHINES
Hamblet Machine Co.
Hudson Sharp Machine Co.
Paper Converting Machine Co., Inc.
Waldron, John, Corp.

FORGINGS (Drop & Hammer)
Kropp Forge Company

FORMING MACHINES
Downingtown Mfg. Co.

FOURDRINIER MACHINES
Downingtown Mfg. Co.

FOURDRINIER WIRES
Appleton Wire Works
International Wire Works
Lindsay Wire Weaving Co.

FREENESS RECORDERS
Trimbey Machine Works

FREENESS TESTERS
Testing Machines, Inc.

FRICTION CALENDERS
Perkins & Son, Inc., B. F.
Textile Finishing Mchy. Co.

FRICTION CLUTCHES
Beloit Iron Works
Link-Belt Co.
T. B. Wood's Sons
Moore & White Co
Pusey and Jones Corp.

GEARS
Farrel-Birmingham Co.
D. J. Murray Mfg. Co.
De Laval Steam Turbine Co.
E. D. Jones & Sons Co.
Improved Paper Mchy. Corp.
Link-Belt Co.
Moore & White Co.
Philadelphia Gear Works
Pusey and Jones Corp.
John Waldron Corp.

GENERATORS
De Laval Steam Turbine Co.
General Electric Co.

GRANITE ROLLS
Beloit Iron Works
Downingtown Mfg. Co.
Perkins & Sons, Inc., B. F.
Pusey and Jones Corp.

GRATING (Sidewalk)
Hendrick Mfg. Co.

GRINDERS
Montague Machine Co.

GRINDING WHEELS
Carborundum Co.
Norton Co.
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan. Inc.

GUIDES (Automatic Web)
John Waldron Corp.

GUIDES (FELT)
Moore & White Co.

GUMMING AND GLUING MACHINERY
Potdevin Machine Co.
Waldron Corporation, John

GUMMED TAPE TESTERS
Thwing Instrument Co.

HAND CLEANER
Magnus Chemical Co.

HAND CLEANER DISPENSERS
Magnus Chemical Co.

HANGERS
T. B. Wood's Sons Co.

HEATERS (Unit)
D. J. Murray Mfg. Co.
J. O. Ross Engrg. Corp.

HEATING AND VENTILATING SYSTEMS
Ross Engineering Corp., J. O.

HEAVY MACHINERY
The Reading Iron Co.

HIGH DENSITY THICKENERS
Moore & White Co.

HOISTS (ELECTRIC)
General Electric Co.

HYDRAULIC MACHINERY
Farrel-Birmingham Co.

INDICATORS
The Bristol Co.
Cambridge Instrument Co.
Testing Machines, Inc.
Thwing Instrument Co.

INTERFOLDING MACHINES
Hudson Sharp Machine Co.
Paper Converting Machine Co., Inc.
John Waldron Corp.

INSTRUMENTS
The Bristol Co.
Cambridge Instrument Co.
Testing Machines, Inc.
Thwing Instrument Co.
Wilson Mechanical Instrument Co.

IRON CASTINGS
D. J. Murray Mfg. Co.
The Frederick Iron & Steel Co.
The Reading Iron Co.

JORDANS
The Appleton Machine Co.
Jones & Sons Co., E. D.
Smith & Winchester Mfg. Co.
Valley Iron Works

JORDAN FILLINGS
Bahr Bros. Mfg. Co., The
Jones & Sons Co., E. D.
Smith & Winchester Mfg. Co.
Valley Iron Works

KNIVES, ETC.
Dilts Machine Works, Inc.
Hamblet Machine Co.
Taylor, Stiles & Co.

LABELLING MACHINES
Potdevin Machine Co.

LABORATORY EQUIPMENT
E. D. Jones & Sons Co.
Pusey and Jones Corp.
Testing Machines, Inc.
Thwing Instrument Co.
Valley Iron Works.

LATHES
Montague Machine Co.

LAY BOYS
Hamblet Machine Co.
Moore & White Co.

LEVELERS
National Oil Products Co.

LITHOPONE
New Jersey Zinc Co.
United Color & Pigment Co.

LOFT DRYERS
Ross Engineering Corp., J. O.
John Waldron Corp.

LUBRICANTS
Gulf Refining Co.
Socony-Vacuum Corporation
Standard Oil Co. of Indiana
Tidewater Oil Co.

MACHINE PARTS (Forged)
Kropp Forge Co.

MAGNIFIERS (Pocket)
Bausch & Lomb Optical Co.

METERING & PROPORTIONING SYSTEMS
Trimbey Machine Works

MICROMETERS
Cady, E. J. & Co.
International Nickel Co.
Montague Machine Co.
Testing Machines, Inc.

MICRO-PROJECTORS
Bausch & Lomb Optical Co.

MICROSCOPES
Bausch & Lomb Optical Co.
Testing Machines Inc.

MOTORS
Allis-Chalmers Mfg. Co.
General Electric Co.

NIPPLES
The Reading Iron Co.

NAPKIN FOLDING MACHINE
Hudson Sharp Machine Co.
Paper Converting Machine Co., Inc.
Waldron, John, Corp.

OPACIFYING PIGMENT
Krebs Pigment Co.
New Jersey Zinc Co.
Titanium Pigment Co.
United Color & Pigment Co.
R. T. Vanderbilt Co.

PACKAGING MACHINES
Hudson Sharp Machine Co.

PACKING
Stebbins Engrg. & Mfg. Co.

PACKING (Rubber)
B. F. Goodrich Rubber Co.
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
U. S. Rubber Co.

PAPER BAG MACHINERY
Potdevin Machine Co.
Smith & Winchester Mfg. Co.
Weber, Herman G.

PAPER BREAK RECORDERS
Thwing Instrument Co.

PAPER CUTTERS
Downingtown Mfg. Co.
Hamlet Machine Company
Moore & White Co.
Smith & Winchester Mfg. Co.

PAPER MACHINES
Downingtown Mfg. Co.

PAPER MACHINE APRONS
Goodrich Rubber Co., B. F.

PAPER MACHINE DRIVES
Downingtown Mfg. Co.

PAPER MANUFACTURERS
Hammermill Paper Co.
West Virginia Pulp & Paper Co.

PAPER MACHINE HOODS
Ross Engineering Corp., J. O.

PAPER MACHINE SLICES
Montague Machine Co.

PAPER AND BOARD CUTTERS
Beloit Iron Works

PAPER AND PULP MACHINERY
Beloit Iron Works
Downingtown Manufacturing Co.
Farrel-Birmingham Co.
E. D. Jones & Sons Co.
Lobdell Car Wheel Co.
Moore & White Co.
Perkins & Son, Inc., B. F.
Pusey & Jones Corp.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

PAPER ROLLS
B. F. Perkins & Son, Inc.
Waldron Corp., John

PAPER SCALES
Testing Machines, Inc.
Thwing Instrument Co.

PAPER STOCK WASHERS
Jones & Sons Co., E. D.

PAPER TESTERS
Perkins & Son, Inc., B. F.
Testing Machines, Inc.
Thwing Instrument Co.
Valley Iron Works Co.
Wilson Mechanical Instrument Co.

PAPER TUBE MACHINERY
Dietz Machine Works
Langston Co., Samuel M.

PAPER WAXING MACHINERY
Waldron Corp., John

PASTING MACHINES
Potdevin Machine Co.
John Waldron Corp.
Weber, Herman G.

PENESCOPE PENETRATION TESTER
Thwing Instrument Co.

PERFORATING MACHINES
Dietz Machine Works
Waldron, John, Corp.

PERFORATED METAL
Harrington & King Perforating Co.
Hendrick Mfg. Co.

PILLOW BLOCKS
T. B. Wood's Sons Co.

PIPE
The Reading Iron Co.

PIPE, Large O. D. (Steel or Wrought Iron)
Taylor Forge & Pipe Works

PIPE, Spiral (Welded or Riveted Steel)
Taylor Forge & Pipe Works

PIPE (Stainless)
International Nickel Co.
Mundt & Sons, Charles

PIPING
Crane Company
Walworth Co.

PLATES, Filter
Stebbins Engrg. & Mfg. Co.

PLATING, CHROMIUM
Chromium Corp. of America

PLATERS
Perkins & Son, Inc., B. F.

PLAYING CARD MACHINERY
Waldron, John, Corp.

WHERE TO BUY

POWER TRANSMISSION EQUIPMENT
De Laval Steam Turbine Co.
Farrel-Birmingham Co.
Link-Belt Co.
Philadelphia Gear Works
T. B. Wood's Sons
PRECISION INSTRUMENTS
The Bristol Co.
Cambridge Instrument Co.
Taylor Instrument Co.
Testing Machines, Inc.
Thwing Instrument Co.
PRESSES (Napkin)
Paper Converting Machine Co.
Waldron Corp., John
PRESS ROLLS
American Wringer Co., Inc.
Beloit Iron Works
Downingtown Manufacturing
Goodrich Rubber Co.
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
Montague Machine Co.
Pusey & Jones Corp.
Valley Iron Works Co.
PRESS ROLLS (Granite)
Beloit Iron Works
Perkins & Sons, Inc., B. F.
Pusey and Jones Corp.
PRESSURE BULKER
B. F. Perkins & Son, Inc.
PRINTING MACHINES
Potdevin Machine Co.
Waldron, John, Corp.
Weber, Herman G.
PRINTING PRESSES
Hudson Sharp Machine Co.
Potdevin Machine Co.
Paper Converting Machine Co., Inc.
John Waldron Corp.
Weber, Herman G.
PULLEYS
D. J. Murray Mfg. Co.
Link-Belt Co.
Improved Paper Mchy. Corp.
Montague Machine Co.
T. B. Wood's Sons
PULPERS
E. D. Jones & Sons Co.
PULP MILL EQUIPMENT (Chemical)
Chemipulp Process, Inc.
Fibre Making Processes, Inc.
PULPSTONES
Carborundum Co.
Norton Co.
PULP PRESSES
Farrel-Birmingham Co.
PULPS
Andersen Co., J.
Castle & Overton
Gottesman & Co., Inc.
Lagerloef Trading Co.
Perkins-Goodwin Co.
Price & Pierce, Ltd.
Pulp and Paper Trading Co.
PULP SCREENS
D. J. Murray Mfg. Co.
Fibre Making Processes, Inc.
E. D. Jones & Sons Co.
Trimbey Machine Works
PULP AND PAPER MILL MACHINERY
D. J. Murray Mfg. Co.
Stebbins Engrg. & Mfg. Co.
PULP THICKENERS
D. J. Murray Mfg. Co.
Downingtown Mfg. Co.
Moore & White Co.
PULP WOOD MACHINERY
Fibre Making Processes, Inc.
Montague Machine Co.
PUMP PRIMERS (Steam and Water Jet)
Valley Iron Works Co.
PUMPS (Acid)
Carthage Machine Co.
De Laval Steam Turbine Co
Frederick Iron and Steel Co.
Moore & White Co.
Oliver United Filters Inc.
Pusey and Jones Corp.
The Frederick Iron & Steel Co.
Valley Iron Works
PUMPS (Centrifugal)
Allis-Chalmers Co.
Downingtown Mfg. Co.
Pusey and Jones Corp.
The Frederick Iron & Steel Co.
PUMPS (Stuff)
Allis-Chalmers Co.
Beloit Iron Works
De Laval Steam Turbine Co
Downingtown Mfg. Co.
The Frederick Iron & Steel Co.
International Nickel Co.
Moore & White Co.
Oliver United Filters Inc.
Pusey and Jones Corp.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
PUMPS (Suction)
Moore & White Co.
PYROMETERS (Roll)
Cambridge Instrument Co.
The Bristol Co.
Pyrometer Instrument Co.
Thwing Instrument Co.
PYROMETERS (Surface —Optical — Radiation)
Cambridge Instrument Co.
Pyrometer Instrument Company
Thwing Instrument Co.
RAG CUTTERS
Perkins & Son, Inc., B. F.
Taylor Stiles & Co.
REAM COUNTERS
Hamblet Machine Co.
RECHIPPERS
Fibre Making Processes, Inc.
RECORDING INSTRUMENTS
The Bristol Co.
Cambridge Instrument Co.
Taylor Instrument Co.
Testing Machines, Inc.
Thwing Instrument Co.
RECORDING TACHOMETERS
The Bristol Co.
General Electric Co.
Pusey & Jones Corp.
RECOVERY OF WASTE PRODUCTS
Stebbins Engrg. & Mfg. Co.
RECOVERY SYSTEMS (Soda & Sulphite)
D. J. Murray Mfg. Co.
Ross Engineering Corp., J. O
RECOVERY SYSTEMS (Waste Heat)
Ross Engrg. Corp., J. O.
REELS
Downingtown Mfg. Co.
Hudson Sharp Machine Co.
REELS, (Upright & Revolving)
Beloit Iron Works
De Laval Steam Turbine Co.
Moore & White Co.
Pusey & Jones Corp.
REFINERS
Bahr Bros.
Haug, Anton J.
REFINING ENGINES
Jones & Son Co., E. D.
REFRACTORIES
Carborundum Co.
Norton Co.
REGULATORS
The Bristol Co.
Control Equipment Corp.
Mason Neilan Regulator Co.
Merritt Engrg. & Sales Co., Inc.
Trimbey Machine Works
REWINDERS
Beloit Iron Works
Cameron Machine Co.
Deitz Machine Works
Downingtown Mfg. Co.
Hamblet Machine Co.
Langston Co., Samuel M.
Moore & White Co.
Smith & Winchester Mfg. Co.
John Waldron Corp.
ROD MILL
Allis-Chalmers Co.
Mine & Smelter Supply Co.
ROLLS
American Wringer Co.
Downingtown Mfg. Co.
Goodrich Rubber Co.
Improved Paper Mchy. Corp.
Montague Machine Co.
The Manhattan Rubber Mfg Division of Raybestos-Manhattan, Inc.
John Waldron Corp.
ROLLS (Chilled Iron & Gray Iron)
Farrel-Birmingham Co.
Improved Paper Mchy. Corp.
Lobdell Car Wheel Co.
Smith & Winchester Mfg. Co.
Valley Iron Works
ROLLS (Forged)
Kropp Forge Co.
ROLLS (Rubber or Rubber Covered)
American Wringer Co.
B. F. Goodrich Rubber Co.
D. J. Murray Mfg. Co.
Downingtown Mfg. Co.
Improved Paper Mchy. Corp.
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
Montague Machine Co.
United States Rubber Co.
ROLL GRINDERS
Farrel-Birmingham Co.
Lobdell Car Wheel Co.
ROLL SLITTING MACHINES
Cameron Machine Co.
Langston Co., Samuel M.
ROLL STANDS
Cameron Machine Co.
Moore & White Co.
ROLL WINDING MACHINES
Cameron Machine Co.
ROSIN SIZE
American Cyanamid & Chemical Corp.
Bennett, Inc.
Paper Makers Chemical Co.
ROTARY SCREENS
Fibre Making Processes, Inc.
E. D. Jones & Sons Co.
Moore & White Co.
Valley Iron Works
RUBBER GOODS
American Wringer Co.
Goodyear Tire & Rubber Co.
B. F. Goodrich Rubber Co.
The Manhattan Rubber Mfg. Co.
United States Rubber Co.
RUBBER HOSE
B. F. Goodrich Rubber Co.
Goodyear Tire & Rubber Co.
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
United States Rubber Co.
SALT
Pennsylvania Salt Co.
SAND & POLISHING MACHINES
Carborundum Co.
Waldron, John, Corp.
SATURATING MACHINES
Moore & White Co.
Potdevin Machine Co.
Waldron, John, Corp.
Weber, Herman G.
SAVEALLS
De Laval Steam Turbine Co.
Downingtown Mfg. Co.
Improved Paper Mchy. Corp.
Moore & White Co.
Oliver United Filters Inc.
SCALES
Cady, E. J. & Co.
SCORE TESTERS
Thwing Instrument Co.
SCREEN DIAPHRAGMS
Goodrich Rubber Co., B. F.
SCREENS
Appleton Wire Works
Beloit Iron Works
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T. B. Wood's Sons Co.
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Moore & White Co.
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SIZING
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National Oil Products Co.
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Thwing Instrument Co.

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TIE RODS
International Nickel Co.

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TOILET WINDERS
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Dietz Machine Works
Hudson Sharp Machine Co.

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Hudson Sharp Machine Co.

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Cameron Machine Co.
Hudson Sharp Machine Co.
Waldron Corp., John

TOWERS
Cameron Machine Co.
Hudson Sharp Machine Co.
Stebbins Engrg. & Mfg. Co.
Waldron Corp., John

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Hauser Stander Tank Co.

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Moore & White Co.
Oliver United Filters Inc.

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Fibre Making Processes, Inc.

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Waldron John. Corp.
Weber, Herman G.

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Bennett, Inc.
National Oil Products Co.
Paper Makers Chemical Corp

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Improved Paper Mchy. Corp.
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Pusey Jones Corp.
Smith & Winchester Mfg. Co
Valley Iron Works

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Cameron Machine Co.
Downingtown Mfg. Co.
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Moore & White Co.
Pusey & Jones Corp.
Shartle Bros. Machine Co.
Smith & Winchester Mfg. Co
John Waldron Corp.

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Improved Paper Mchy. Corp.
International Wire Works
Lindsay Wire Weaving Co.
Purves Machine Wire Co., Inc.

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WIRE CLOTH
International Nickel Co.

WIRE GUIDES
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American Wringer Co.
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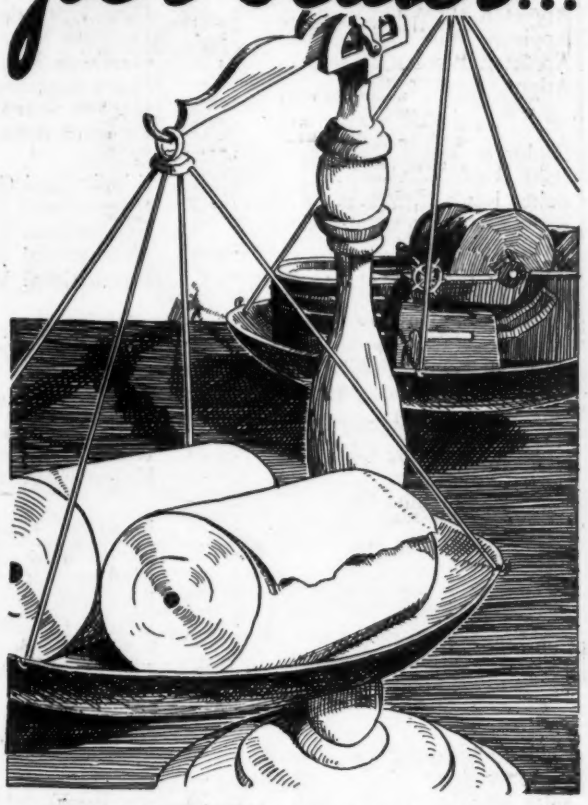

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